H2 Economics – Content Clinic 3 (Firms & Decisions)

2.2 Firms and Decisions

2.2.1 Objectives of firms

- a. Firms aim to maximise profits
 - Profit as the difference between total revenue and total cost
 - Profit-maximising output occurs at the point when marginal revenue (MR) equals marginal cost (MC) and where MC is rising
- Firms may choose to pursue alternative objectives such as revenue maximisation, profit satisficing and market share dominance

2.2.2 Cost and revenue

- a. Firms' cost and revenue concepts in the short run and long run
- b. Internal and external economies and diseconomies of scale and their link to the long-run average cost of production

2.2.3 Firms' decisions and strategies

- a. Firms make decisions and engage in pricing, cost and product differentiation strategies aimed at raising revenue and/or lowering unit costs. These include:
 - growth, diversification and shut-down
 - price competition
 - third degree price discrimination
 - innovation, research and development
 - marketing
 - collusion with other firms
- b. Firms consider the existing and potential levels of competition in the industry when making decisions and engaging in strategies

c. Impact of firms' decisions and strategies on:

- efficiency (allocative, productive and dynamic efficiency)
- consumer welfare (consumer choice, product quality and consumer surplus)
- other firms (cost, revenue and profit)

a. Key Definitions:

- i. **Short Run** is defined as a period over which <u>at least one factor input is fixed</u>.
- ii. **Long Run** is defined as a period over which <u>all factors used in the production</u> <u>process are variable</u>.
- iii. **Economies of Scale** refers to <u>costs savings enjoyed from large-scale</u> <u>production</u>.
- iv. **Barriers to entry** refers to anything that <u>prevents or impedes the entry of new</u> <u>firms into an industry</u> and thereby <u>limits the degree of competition faced by</u> <u>existing firms</u>.
- v. **Allocative efficiency** refers to the current <u>combination of goods produced</u> <u>and sold</u> that gives the <u>maximum satisfaction for each consumer</u> at the current level of income.
- vi. **Productive efficiency** refers to the situation when <u>output is produced with</u> <u>the least costly combinations of inputs</u> given the current level of technology.
- vii. **Dynamic efficiency** refers to the situation where firms are <u>technologically</u> <u>progressive through investing in R&D</u> to meet the changing needs and wants of consumers over time.
- viii. **Equity** is defined as a <u>distribution of income that is considered to be fair or</u> just.

Characteristics

Internal Economies of Scale		
Diagram	Cost LRAC	
	C ₀ C ₁ C ₂ O Q ₁ Q ₂ MES Q ₃ Q ₄ Output	
Explanation	 ation Internal Economies of Scale (IEOS): Increase in output → Less than proportionate increase in total cost → Average cost decreases 	
	 Sources of IEOS: Specialisation & division of labour, indivisibilities of machinery, bulk purchases, large scale advertising etc. 	
	 Example: By increasing its scale of production, a firm gets to enjoy marketing economies as its cost of advertising campaigns can now be spread over a larger output. This will lower average costs for the firm. With reference to the diagram above, an increase in the firm's output from Q₁ to Q₂ allows it to enjoy lower average costs from C₀ to C₁, which is a movement along the firm's LRAC. 	
	2 Internal Diseconomies of Scale (IDOS):	
	 Increase in output → More than proportionate increase in total 	
	cost → Average cost increases	
	 Sources of IDOS: Managerial difficulties, low morale etc. 	

External Economies of Scale	
Diagram	Costs (\$)
	C ₂ C ₂ C ₁ C ₂ C ₂ C ₂ C ₃ C ₄ C ₅ C ₄ C ₅ C ₆ C ₇ C ₇ C ₇ C ₇ C ₇ C ₇ C ₇ C ₇
Fxplanation	3. External Economies of Scale:
	 Reduction in unit costs from expansion or growth of industry → LRAC shifts downwards Sources: Better infrastructure within an area of concentrated operations, joint efforts in R&D by firms within the same industry Example: As the chemical industry expands, more firms relocate their operations to Jurong Island. Due to the concentration of operations within the area, facilities such as better transport, roads and telecommunication systems may be set up to serve the needs of the industry, thereby lowering operating costs. With reference to the diagram above, the expansion of the industry thus leads to a downward shift in the firm's LRAC from LRAC₀ to LRAC₁. The firm experiences a fall in its average cost from C₀ to C₁ for the same output level Q₀.
	4. External Diseconomies of Scale:
	• Increase in unit cost norm expansion or growth of industry \rightarrow LRAC shifts upwards
	 Sources: Increased competition for FOP such as labour or raw materials, increased strain on infrastructure
	Note: For external economies of scale, the shift in LRAC is not due to the firm increasing its own output but due to the growth of the industry in general.

Barriers to Entry (BTEs)

Structural: Generally related to basic industry conditions such as cost and demand <u>Examples</u>

High capital outlay: Technology required is very costly (eg. Extensive amounts of infrastructure, large machinery or equipment)

Internal economies of scale: If there are extensive economies of scale such that MES occurs at high levels of output, only the larger firms would be able to reap the benefits of EOS whereas new (often smaller) firms would struggle to compete due to higher costs.

Strategic: Created intentionally or enhanced by incumbent firms in the market for the purpose of deterring entry

<u>Examples</u>

Aggressive pricing strategies: Price wars, predatory pricing or limit pricing, to drive out rivals within the market or deter potential entrants

Product recognition: Use of marketing to create product differentiation and brand loyalty to decrease substitutability of own product vs other products

Control of essential FOP/Exclusive deals: Deny key factors of production to competitors by signing exclusive deals with suppliers mandating that they only supply the firm and not others

Statutory: Created by the government through laws and regulations <u>Examples</u>

Licenses: Government can issue a limited number of licenses to operate within an industry, without which firms are not able to enter the market

Intellectual property rights: Patents, copyrights or franchises. These property rights prevent others from imitating and duplicating a firm's idea or product, granting them monopoly power.

How to explain BTEs

Step 1: Explain what the firm/government does (if applicable).

Step 2: Explain the effect of these actions on the firm/market.

Step 3: Link back to the primary concerns of a firm and explain why potential entrants are deterred.

Example

Predatory Pricing:

Predatory pricing is a strategic barrier to entry that an incumbent firm may carry out to eliminate new competitors from the market. The firm could lower its price below its average costs. (Step 1)

Competitors may have to engage in a price war to maintain their market share. As the products offered by the firms within the market are substitutes, firms that do not follow suit and lower their prices face a fall in demand for their goods due to the price of available substitutes falling. Given that price is lowered significantly, all firms may end up

with subnormal profits. However, the incumbent firm is likely to have sufficient financial reserves to tide out these subnormal profits. New competitors on the other hand may not have as much reserves and would eventually be forced to exit the market in the long run. (Step 2)

New entrants may thus be deterred from entering the market due to the likelihood of the incumbent firm conducting predatory pricing against them, resulting in subnormal profits and their eventual exit from the market. (Step 3)

Note: More in-depth economic analysis and a diagram may be required depending on the mark allocation of the question.

<u>Behaviour</u>

Objectives

Decision of firm: To stay in the market		
When does a firm need to decide whether to shut down or not?		
It must be making subnormal profits f	or it to have to make this decision.	
Otherwise, it does not need to consid	er exiting the market.	
Shutdown	Conditions	
Short Run	Long Run	
AVC>AR or TVC>TR	AC>AR or TC>TR	
 Shut down if total revenue is unable 	 In long run, all costs are variable 	
to cover total variable costs (i.e.	The firm must make at least normal	
TVC>TR)	profits to stay in the industry	
Fixed cost cannot be avoided even if	 The firm earns nothing if it shuts 	
the firm chooses to shut down	down and leaves the industry	
 If the firm ceases production, it can 	• If it is making a loss in the long run,	
at least avoid variable cost	it is better to exit the industry and	
 Continuing production means 	earn nothing than to incur losses	
continuing to incur TVC, which		
cannot be fully covered with total		
revenue earned		
 On the other hand, shutting down 		
means no revenue is earned and no		
variable cost is incurred, the only		
cost incurred is TFC		
Being rational, the firm should		
minimise losses by shutting down		
and only incurring TFC instead of		
continuing production and incurring		
a larger loss of TFC plus part of TVC		
Key idea: Even when making subnormal		
profits in SR, due to presence of fixed		
costs, shutting down may not always be		
the optimal decision compared to		
continuing production.		



Could arise due to:

Principal agent problem: Interests of the firm owners and the managers running the firm are not aligned.

Non-economic motives: Firms do not always make decisions based on financial or economic motives. Firstly, firms that are family or state-owned in particular may have

other motives besides economic motives. Secondly, firms may incorporate ESG (Environment, Social, Governance) concerns into their decisions. Imperfect information: Firms might not know their own MC and MR, making it difficult to accurately choose the optimal output or price.

Short term goals: Sales revenue maximising or growth maximising firms may not be profit maximising.



Step 1: Explain what happens when MR>0

- Marginal revenue is positive for every additional unit of output produced up to Q*
- Increasing output adds to the total revenue of the firm
- A revenue-maximising and rational firm should continue to expand production

Step 2: Explain what happens when MR<0

- Marginal revenue is negative for every additional unit of output produced from Q^{\star} to Q_2
- Increasing output takes away from the total revenue of the firm
- A revenue-maximising and rational firm should cut back on production

Step 3: Explain what happens at MR=0

- At MR=0, increasing output no longer adds to the total revenue of the firm
- Revenue is at its maximum at MR=0

Objective of firm: Growth Maximising

Can be achieved through internal or external expansion

Internal expansion:

• Lowering prices to capture a larger market share, up till the breakeven point (normal profits) at AC=AR (short run)

• Doing product differentiation through advertising, doing R&D (product or process innovation) to capture a larger market share (long run)

External expansion:

- Expansion not attributed to an increase in the firm's business activities
- Typically achieved through mergers and acquisitions, vertical integration, horizontal integration and conglomerate integration

Strategies

Who are the stakeholders and what kinds of impacts do firms' strategies have on them?			
Firms	Consumers	Society	
Revenue	Price	Allocative efficiency	
Costs	Quantity	Productive efficiency	
Profits	Consumer surplusChoice/Variety	(Society and firm's POV)	
	Quality of G&S	 Dynamic efficiency (Willingness and Ability) Equity 	

Performance	Condition	What to look out for?
Allocative Efficiency	P=MC	 Is P=MC or P<mc?< li=""> </mc?<>
		 As firms in imperfect competition are usually allocative inefficient, focus on explaining the extent of the inefficiency. Also consider whether the firm is profit-maximising or has chosen to ↓ price (price competition) or ↑ price
Broductive Efficiency	Producing at the	(collusion).
(Society's POV)	lowest point of LRAC (MES)	 What is the scale of production? Is it at MES? As firms in imperfect competition are usually productive inefficient from society's perspective, focus on

		explaining the extent of the
Productive Efficiency (Firm's POV)	Producing at a point on the LRAC	Is there competitive pressure which will reduce the complacency (and X-
Dynamic Efficiency	Firm is conducting	inefficiency)?Does the firm have the
	R&D	willingness and ability to undertake R&D?
		 Willingness: Is there competitive pressure on the firm?
		• Ability: Is the firm able to make and retain supernormal profits?
Equity	Fair or just distribution of income	• What is the level of profits earned by the firm?
		What is the nature of the good?What is the price of the good?





٠	Once competitors are driven out,	the firm can then abandon limit pricing and
	firm gains market share and market	raise prices once again.
	power $ ightarrow$ lower level of competition	
	in the market	
٠	Firm can set higher prices	
٠	Lower output	
٠	Lower variety due to lesser	
	competitors	
٠	Poorer quality of service if firm sees	
	less need to improve quality of G&S	
	due to lowered competition	



Total profits of the firms increase to P_1aQ_10	Under uniform pricing, firm charges
ightarrow each individual firm may experience an	uniform price P_{υ} in both markets where
increase in their own profits.	MC=MR for some aggregate demand
	function.
	Output is Q_1 and Q_2 in the relatively price
	inelastic and relatively price elastic market
	respectively.
	Total revenue is $P_u b Q_1 0$ and $P_u d Q_2 0$
	respectively.
	Step 2: Explain the new equilibrium after
	strategy is implemented
	Firm charges P_{H} and P_{L} in the relatively
	price inelastic and relatively price elastic
	market respectively.
	Output is Q_H and Q_L in the relatively price
	inelastic and relatively price elastic market
	respectively.
	Total revenue increases to P_HaQ_HO and
	$P_L cQ_L 0$ respectively.
What is the impact of collusion on	What is the impact of price
society?	discrimination on society?
 Greater allocative inefficiency as 	 Increase in allocative inefficiency in
price markup (gap between P and	the price inelastic market due to
MC) increases	higher price markup
 Productive efficiency (firm's POV) 	 Decrease in allocative inefficiency
may decrease due to organisational	in the price elastic market due to
slack and x-inefficiency arising from	lower price markup
decreased competition	 Productive efficiency (firm's POV)
 Productive efficiency (society's 	may decrease due to x-inefficiency
POV) may decrease assuming the	 Productive efficiency (society's
firm was producing on the	POV) may increase assuming the
downward sloping portion of LRAC	firm was producing on the
 Effect on dynamic efficiency is 	downward sloping portion of LRAC if
ambiguous: On one hand, ability to	output has increased overall
conduct R&D has gone up due to	Dynamic efficiency: Refer to
increased profits. On the other	segment in Collusion
hand, willingness to conduct R&D	• Equity is worsened in the price
has gone done due to decreased	inelastic market as these
competition.	consumers pay higher prices than
Equity has worsened as firms'	before. Equity is improved in the
profits have increased and there is	nrice elastic market as these

now greater redistribution of income	consumers now enjoy lower prices
from household to the firms	and are able to purchase G&S they
	might not have been able to before.

Non-price strategies

Product Differentiation	Mergers and Acquisitions
Goal: Distinguish product of the firm from	Goal: Gain access to new markets and
competing firms, reducing PED and	ideas or secure essential FOP.
substitutability and increasing demand.	
Price, Cost, Revenue $P_0 = C_0$ C_0 MR MR MR^2 MR^2 $R_0 = C_0$ Q_0 Q_1 Output	Price, Cost, Revenue Prove de la construction de l
Step 1: Explain the initial equilibrium Firm is initially selling at Q₀ where MC=MR and MC cuts MR from below and earning normal profits.	Step 1: Explain the initial equilibrium Firm is initially selling at Q_0 where MC=MR and MC cuts MR from below. Profit is P_0abC_0 .
Step 2: Explain the new equilibrium after strategy is implemented After engaging in product differentiation (real or imaginary), firm's demand increases from AR ₁ to AR ₂ due to favourable changes in tastes and preferences. Demand is also more price inelastic. Output increases from Q ₀ to Q ₁ while price increases from P ₀ to P ₁ . Profit increases to P ₁ cbC ₁ .	Step 2: Explain the new equilibrium after strategy is implemented There would be an increase in demand for the firm's G&S after the merger. Demand is also more price inelastic due to a reduction in competitors. Firm's demand increases from AR to AR ₂ . Output increases from Q_0 to Q_1 while price increases from P_0 to P_1 . Profit increases to P_1 cdC ₁ .
What is the effect of product	What is the impact on society?
differentiation on consumers?	
Higher prices	Refer to segment in Collusion

٠	Larger output
•	Quality of G&S may have increased
•	Variety may have increased

Level of competition		
Dynamic: Change in level of competition	Static: No change in level of competition	
Example:	Example:	
 Explain one reason why consumers might be better off and one reason why consumers might be worse off from Grab's takeover of Uber. 	 Assess whether on balance large supermarkets are desirable for society. 	
Focus on changes to performance indicators.	Focus on extent/size of performance indicators.	
Compare between before and after.		
Changes in level of competition within a	Level of competition in a market is	
market can be due to:	dependent on the structure of the	
 Strategies employed by firms 	market:	
 Policies enacted by government 	 Perfect competition 	
 Changes in market conditions and 	 Monopolistic competition 	
cost structures of firms	 Oligopoly 	
	 Monopoly 	
What are the effects of a fall in		
competition within a market?	What are the effects of low levels of competition in a market?	
Firms		
• Firms within the market gain	Firms	
increased ability to retain	• Firms within the market are able to	
supernormal profits	retain supernormal profits	
 Firms are able to set higher prices due to greater price-setting ability 	 Firms have high price setting ability 	
Consumers	Consumers	
Choice/variety may decrease due to	 Choice/variety is low due to lack of 	
lack of product innovation	product innovation	
 Quality of G&S may suffer due to 	 Ouality of G&S is low due to low 	
lower competition in the market	levels of competition in the market	
Society	Society	
Allocative inefficiency increases	 Large extent of allocative 	
due to higher price markup	inefficiency due to high price	
	markup	

Dynamic efficiency: Ability to Dynamic efficiency: High ability to • • conduct R&D increases due to conduct R&D but low willingness to higher profits; willingness to do so conduct R&D decreases due to • Productive efficiency (Firm's POV): lower competition Highly inefficient due to Productive efficiency (firm's POV): complacency or organisational • Falls due to x-inefficiency slack (complacency or organisational Productive efficiency (society's slack) POV): Depends on assumptions on Productive efficiency (society's where production is initially POV): Depends on assumptions on Equity: Low level of equity due to • where production is initially high prices and sustained Equity: Falls due to higher prices redistribution of wealth from and profit households to firms

Important areas not covered:

- Effects of increasing the market share of a firm on consumers and society (p.47 of Firms and Decisions (II))
- Threat of competition/Contestable markets (p.20-21 of Firms and Decisions (II))
- Characteristics of different market structure (p.13 of Firms and Decisions (II))
- Limitations and conditions of various strategies