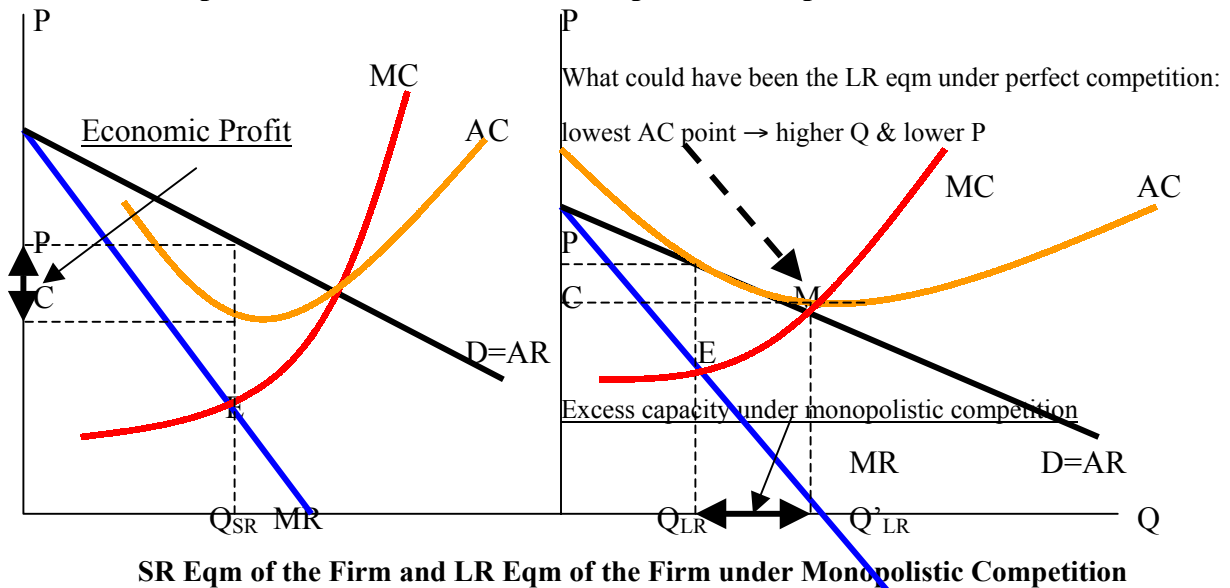


Week 8. Between Competition & Monopoly

1. Monopolistic Competition refers to a market in which products are heterogeneous, but which is otherwise the same as a market that is perfectly competitive. Therefore, it satisfies the following conditions.

- i) numerous participants (producers)
 - ii) freedom of entry & exit
 - iii) perfect information
 - iv) heterogeneity of the product
- a. A monopolistic competitor's D-curve is downward sloping. Each seller's product is slightly differentiated from the others' and caters to different clienteles, but since different products are imperfect substitutes, no one competitor will attract away all of the business.
 - b. Therefore, a monopolistic competitor enjoys something akin to a small monopoly, which may earn economic profit > 0 in the SR. However, +ve economic profits will attract new entrants not with identical products, but with products sufficiently similar to hurt in the LR.
 - c. Freedom of entry & exit ensures that the monopolistically competitive firm earns no higher return on the K (ROI) in the LR than elsewhere. Therefore, in the LR price will be driven to the level of AC.

2. Price & Output Determination under Monopolistic Competition



- a. The D-curve of a monopolistic competitor is likely to be much flatter than the pure monopolist's because there are many other substitutes.
- b. The SR economic profit cannot persist, because new firms will be attracted into the market.
- c. In the LR, $P=AC$ as in perfect competition, and thus, drives economic profit to 0. This is indicated by the firm's D-curve tangent to the AC curve. ($P=D=AR$)
- d. If AC curve fails to touch the D-curve, the firm will incur an economic loss.
- e. Excess Capacity Theorem & Resource Allocation

- i) Under perfect competition, the firm's D-curve is horizontal, so tangency must take place at the minimum point on the AC curve, M.
- ii) LR monopolistic competitor's output level tends to be lower than the level that minimizes the AC. (perfect competition)
- iii) Hence, AC of monopolistic competitor will be higher than necessary (perfect comp) and output lower than the optimal. This results in the **excess capacity**.
- iv) From this observation, it can be inferred that society can save resources if firms combine into a smaller number of larger companies that produce the same total output, because the latter can produce the same output at lower cost. Hence, the inefficiency of the numerous small monopolistic competitors. (e.g. the highway intersection with four gas stations with less than full capacity customers would serve the available customers better with little increase in delays and at lower costs if they merge into two stations.)
- v) However, even if a smaller number of larger firms could reduce costs, society may not benefit from the change, because it would leave the consumers a smaller range of choices. (Downside of merger)

3. Oligopoly is a market dominated by a few sellers, at least several of which are large enough relative to the total market to be able to influence the market price.

a. How to analyze Oligopolists' Profit Maximizing Behaviors

- i) *Ignore Interdependence*: Each oligopolist just maximizes its own profit without any regard to the others. In this case, the analysis is identical to that of monopoly.
- ii) *Strategic Interaction*: Each oligopolist recognizes the others' influence on their market share and profit, and reacts with appropriate strategies. (Game)
- iii) *Cartel* is a group of sellers of a product who have joined together to control its production, sale, and price in the hope of obtaining the advantages of monopoly. (e.g. OPEC) However, cartels are not easy to organize and even more difficult to preserve. Once the cartel drives up the price and increases profitability, it is tempting for each seller to offer secret discounts that lure some of the very profitable business away from other members. Cartels, therefore, usually adopt elaborate policing (monitoring) arrangements. In this sense, cartels are unlikely to succeed or to last very long if the firms sell many, varied products, whose prices are difficult to compare and whose outputs are difficult to monitor. They are considered the least desirable forms of market organization. A successful cartel may end up charging monopoly price and obtaining monopoly profits. But because the firms do not actually combine their operations, the cartel offers no offsetting benefits in the form of economies of large scale production.
- iv) *Price Leadership* (Stackelberg Model) *and Tacit Collusion*: Under price leadership, one firm, often the largest firm in the industry, sets the price for the industry and the others follow. The role of the leader may rotate from one firm to another. One problem is that, while oligopolists as a group may benefit by avoiding a dangerous price war, the firms may not benefit equally. The firm that is the price leader may be in a better position to maximize its own profits. But if the price leader does not take into account its rivals welfare, it may find itself dethroned. And thus, this type of tacit collusion is easy to break down. (Game)

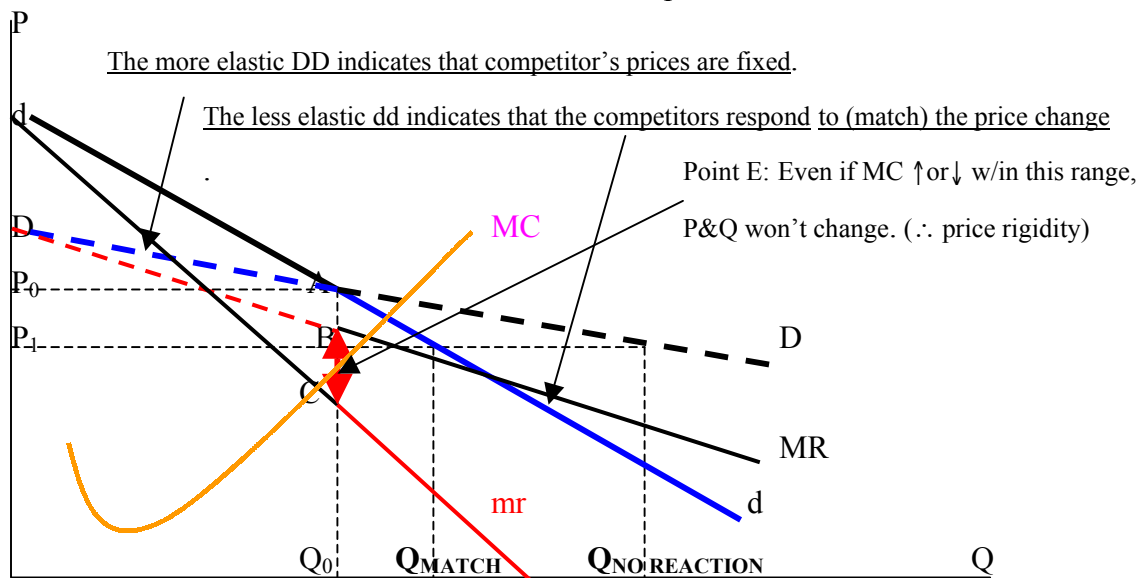
- v) *Sales Maximization* Management's (CEO's) compensation is often tied more directly to the company's size, as measured by its sales volume, than to its profit. Therefore, the firm's managers may select a price-output combination that maximizes sales rather than profits. This would lead to different decisions than does profit maximization. **As we already know, TR is maximized at the point where $MR=0$.** (cf. The manager's role is to maximize the firm's shareholder's wealth). – i.e.

shareholder wealth	=	revenue	+	market capitalization
	=	earnings (profit)	+	share price (firm valuation)

Therefore, if the firm is maximizing sales revenue, it will produce more output and charge a lower price than a profit-maximizer. → Greater market share.

b. Kinked Demand Curve Model

- i) Compared to the constantly fluctuating prices of the wholesale input commodities, the oligopolist's product prices, generally retail end-user goods, don't change so often. (*Price Rigidity of Oligopolistic Market*) One reason may be that, when an oligopolist cuts the price, it is never sure how its rivals will react. Accordingly, *the oligopolist's D-curve is modeled to represent two possible reactions of the rivals – a) one curve representing the scenario where the rivals match the price & b) the other representing the scenario where the rivals stick to the initial price when our firm ↑P.*



The Kinked Demand Curve & Sticky Prices

The hypothesis is that a typical oligopolistic firm has good reasons to fear the worst: the rivals will match the price cut to protect themselves. Then, the more inelastic dd will apply if the firm decides on a price reduction.

- ii) On the other hand, if the company chooses to increase price, the hypothesis is that the firm must fear the worst also in this case: the rivals will still keep the old price level collecting the benefits from our firm's higher price. Then, the more elastic DD will apply if the firm decides on a price hike.

- iii) In sum, the firm will face a segment of the elastic DD if it raises price, and a segment on of the inelastic dd if it cuts its price. there fore, its true D-curve will be *DAd*, called *Kinked Demand Curve*. Under these circumstances, it will pay manager to vary prices only under extreme provocation.
- iv) The relevant composite MR curve facing the firm is DBCmr. Therefore, the kinked D-curve leads to a MR curve that takes a sharp plunge between B and C. Consequently, moderate upward or downward shifts of MC curve will still leave it intersecting the MR curve somewhere between B and C, and thus will not lead the firm to change its output decision. Therefore, the firm's price will remain unchanged. This is why the kinked D-curve makes prices sticky.

c. Game Theory Approach

- i) *Maximin Strategy & Prisoners' Dilemma* (Paranoid Strategy)
 - a) Maximin Criterion means selecting the strategy that yields the maximum payoff on the assumption that your opponent does as much damage to you as he/she can (minimum payoffs). Fear of what its rival will do virtually forces each firm to offer a low price and to forgo the high profit that each could earn if it could trust the other to stick to a high price. Particularly where the number of firms is small, firms should not be permitted to confer or exchange information on prices. This also explains how competition limits profits and benefits consumers, and why price cartel arrangements are fragile.
 - b) Prisoners' Dilemma is another interpretation of the Maximin strategy, where two captured crime suspects are interrogated in separate rooms (absence of any information). Each suspect has two strategy options: to deny the charge or to confess. If both deny, both go free for lack of evidence. But if one confesses and the other does not, the silent prisoner will be indicted and go to prison. The maximin solution, then, is for both to confess and receive moderate sentence.

Payoff			Firm B's	Strategy	
	Matrix	High	Price	Low	Price
Firm A's	High Price	A gets 10	B gets 10	A gets -2	B gets 12
Strategy	Low Price	A gets 12	B gets -2	A gets 3	B gets 3

* Nash "would-be" under Maximin strategy

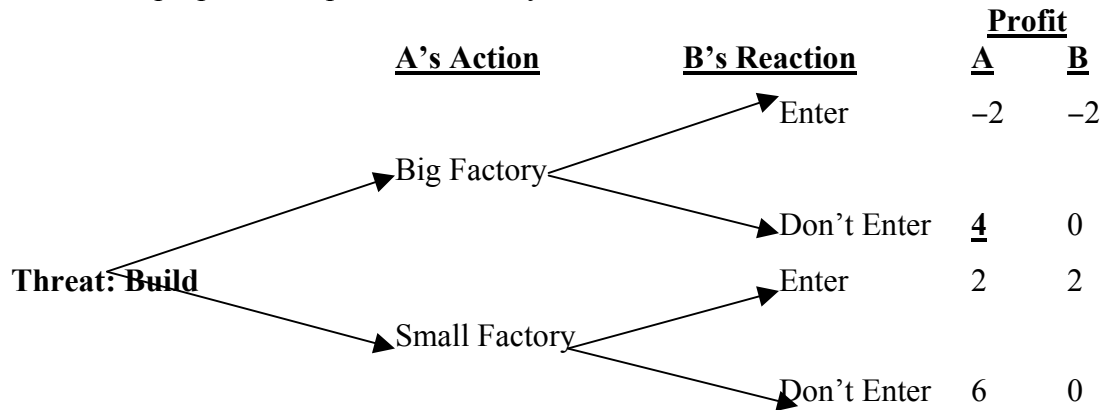
- ii) *Nash Equilibrium* (Generalized Cournot E_{qm}) results when each player adopts the strategy that gives him/her the highest possible payoff (dominant strategy) given that his/her rival has chosen an optimal strategy. Nash equilibrium assumes when the rivals learn that each firm will earn a higher profit if it selects option different from the other's, then it will stick with that choice. In general, a Nash equilibrium is a situation in which both players adopt moves such that each player's move is its most profitable response to the move of the other.

Payoff		B			Payoff		B	
		Low	High				Low	High
A	Low	1,2	0,1		A	Low	2,1	0,0
	High	2,1	1,0			High	0,0	1,2

Dominant Strategy for A

Nash Eq^m for A, leader & B, follower

- iii) *Repeated Games* give players the opportunity to learn something about each other's behavior patterns and, perhaps, to arrive at mutually beneficial arrangements. By adopting some fairly clear pattern of behavior, each firm can seek to attain a reputation that elicits a desired response from its competitor. When games are repeated, the players may be able to escape the paranoid maximin trap.
- iv) *Entry Deterrence (Threats & Credibility)*
 For a threat to be credible, the threatenor must take steps that commit it to carry out the action such as committing to a large sunk cost project with excess capacity. This leads to a strategic decision for the existing firm in the industry whose primary purpose is to prevent the entry of new firms.



		B		
		Enter	Don't	
A	Big Factory	-2,-2	4,0	-2
	Small Factory	2,2	6,0	0
Column Max		2,2	6,0	

The credible threat is that firm A builds a big factory. Then, the increased output will depress prices and profits. Firm B will be better off staying out of the business. The big factory obviously will have excess capacity, which is not necessarily wasteful as it prevents the possible entry of rivals.

4. Monopolistic Competition, Oligopoly & Public Welfare

In the case of a perfectly contestable market, where entry & exit are costless and unimpeded, the constant threat of entry forces even the largest oligopoly to behave well. Because perfect competition requires a large number of negligibly small firms, no industry with economies of scale can be perfectly competitive. However, markets that contain a few oligopolies may be highly contestable. But no industry is perfectly contestable. Perfectly contestable markets have at least two desirable characteristics.

- a. Profits exceeding the opportunity cost of capital are eliminated in the LR by freedom of entry.
- b. Inefficient enterprises cannot survive in a perfectly contestable industry because cost inefficiencies invite replacement of the incumbents by entrants who can provide the same outputs at lower cost and lower prices.

5. More Games

a. *Dominant Strategy*: No matter what B chooses A will always choose High, because A's payoff is always greater than B's. Similarly, B will always choose Low.

		B	
		Low	High
A	Low	1,2	0,1
	High	2,1	1,0

b. *Nash E_{qm}* : Low, Low is the Nash E_{qm} , because if B chooses Low, A will choose Low, too rather than High, and *vice versa*. So, i) if A expects B to charge Low and B expects A to do the same; ii) if A expects B to charge High, & B expects A to do the same; iii) if B expects A to charge Low, B will choose Low; iv) if B expects A to charge High, B will choose High..

* Choosing the optimal Strategy under the assumption that the rival will always choose its own optimal strategy, too.

		B	
		Low	High
A	Low	2,1	0,0
	High	0,0	1,2

c. *Nash E_{qm} in Class*: Study hard is the dominant strategy for students and also the Nash E_{qm} as well under the assumption that the teacher will also do his best (optimal choice).

Nash E_{qm}		Students	
		Study Hard	Don't
Teacher	Good Lecture	A,A	B,F
	Lousy Lecture	F,B	F,F

d. *Maxmin in Class (Class Collusion Dilemma)*

Maxmin		Student B	
		Study Hard	Goof
Student A	Study Hard	A-,A-	A,B-
	Goof	B-,A	B-,B-