

ECN 104 Notes: April 4 and 7

Monopolistic Competition

A market structure in which many firms sell a differentiated product. Entry and exit are relatively easy. There are a large number of firms, thus, the firms have very little control over price.

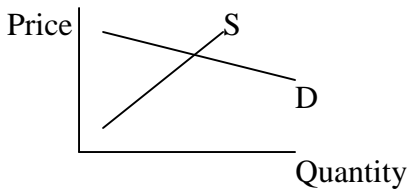
Outcomes of monopolistic competition:

- no collusion
- independent action
- product differentiation (this allows them some control over price)
- involves much non-price competition such as advertising or other selling strategies.

Product differentiation may occur in areas such as: product attributes, service, firm location & brand names

Examples of monopolistic competition are: grocery stores, shoe stores, clothing stores, restaurants, etc.

An individual firm's demand curve is highly inelastic, but not perfectly inelastic. The greater the number of firms in the industry, the more elastic demand is because there are more close substitutes and less probability for product differentiation.

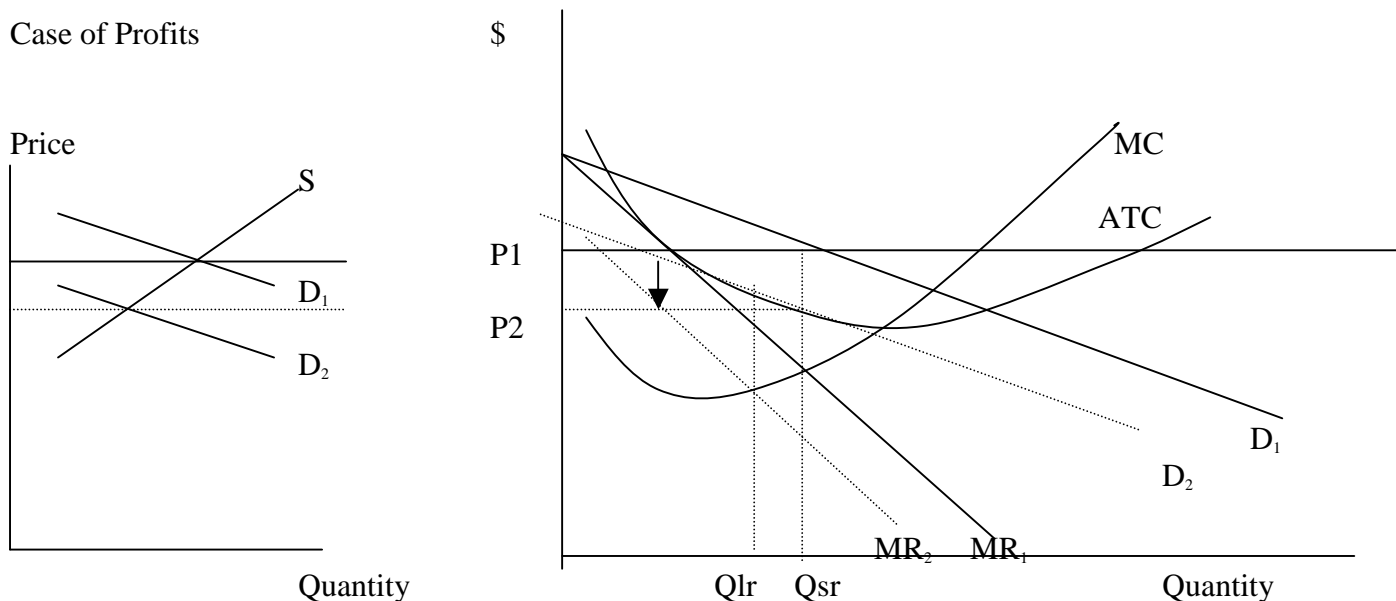


How do firms in monopolistically competitive industries determine price and output?

In the short run, they produce Quantity such that $MR=MC$. Price is determined where $Q_s=Q_d$

In the long run, firms can enter or exit the industry. Firms will enter when economic profits exist, firms will exit when economic losses exist. As such, the equilibrium will be at $P=ATC$, such that only normal profits occur. You can think of the entry of new firms as effectively lowering any single firm's demand at any given price. Why? Because each firm has a smaller share of the market demand. This is due to the fact that the products are close substitutes, so many customers will buy products from any of the firms.

Case of Profits



Monopolistic competition firms face a complex mix of product attributes, price and advertising. Each combination yields a different demand and cost situation for the firm, and as such is not easily expressed. This model does an adequate job of explaining the basic expectations on price and quantity choice.

Reality check: In real life, some firms in monopolistically competitive industries may obtain more than normal profit. They achieve this because:

1. They achieve sufficient product differentiation
2. Entry/Exit are not as easy in reality as they are in theory

Still, these models are fairly close for most firms. As such, they do a pretty good job of explaining how firms choose price and quantity.

Question: Why is $MR < P$ in a monopolistically competitive industry? Compare it to perfect competition. In perfect competition there is only one price, so MR is constant. No matter how many units they decide to sell, they will always sell at the same price, otherwise demand=0. Thus, the revenue of the last unit will always be the same. In monopolistic competition, there is one price (they don't price discriminate), but if you charge a lower price, demand will increase. So your marginal revenue for the last unit will change

(decrease) as successive units are sold. It will be lower than demand, always, because you are charging one price for the good.

Efficiency

Allocative: Since $MB=P > MC$ monopolistic competition is not allocatively efficient

Productive: Since the firms are not producing at min ATC, they are not productively efficient

Oligopoly

A market structure dominated by a few large producers of homogeneous or differentiated products.

- Firms have large control over price but are mutually interdependent with one another (each firm's choices affect the outcome of the other firms)
- High barriers to entry (there exist large economies of scale as well as critical ownership of resources)

Examples of Oligopolies: Steel Producers (Stelco, Dofasco) –products homogeneous
 Car manufacturers (GM, Ford, etc.) –products differentiated

Mergers: Firms often merge in order to increase their control over the market, that is, to increase their market share.

Market share: a measure of control that a firm is thought to have over price.

Consider, the more firms that enter an industry, the smaller the effect that one firm's supply will have on price.

There are 2 measures of market competition. These measures give an indication of how competitive a market is. A low value (less than 40%) for CR implies a fairly competitive market. A high value implies a fairly oligopolistic market. If the measure is 100%, it means that there is only one firm in the industry, and that firm is a monopoly.

1. Concentration Ratio (CR) = $\frac{\text{total sales of the largest firms in an industry}}{\text{Total sales of all firms in an industry}}$

2. Herfindel Index = Sum of squared **percentages** of market shares of all firms

$$\begin{aligned} &= \sum (S_i)^2 \\ &= (S_1)^2 + (S_2)^2 + (S_3)^2 + \dots + (S_N)^2 \end{aligned}$$

Note that the market share of firm i is: $\frac{\text{total sales of firm i}}{\text{Total sales of all firms in the industry}} \times 100$

A low value of HI (less than 2000) indicates high industry competition.

Note: there are several problems with the CR measure, among which are: inaccurate measures when the firms are all the same size, localized markets, inter-industry competition, and world trade competition. The Herfindahl Index solves only the first of these problems. The result is, these measures sometimes under or over state the level of competition in the industry. (note: you need to know which for the exam)

Oligopoly Pricing

In order to study how oligopolists determine what quantity to produce and what price to set, it is useful to understand a bit of game theory.

Game theory- theory of strategy associated with games such as chess/bridge. Used to analyze outcomes that are dependent on other player's actions.

Simple Game: (officially called the prisoner's dilemma)

Suppose we have 2 firms that produce oil. The first firm is Black Gold (BG), the second is Liquid Energy(LE). Each firm can sell their oil at a high price, Ph, or a low price Pl. The product is homogeneous, so consumers will buy at either firm, they will almost all buy at the lower priced firm if one firm has a lower price than another.

So, we can think of firm's outcomes given various choices. We know that there are four possibilities:

1. BG sets its price high, LE sets its price high (customers split evenly between firms, profit=25ea)
2. BG sets its price high, LE sets its price low (customers prefer LE, BGprofit=5, LEprofit=50)
3. BG sets its price low, LE sets its price high (customers prefer BG, BGprofit=50, LEprofit=5)
4. BG sets its price low, LE sets its price low (customers indifferent, profit=10 ea)

We can map these into 4 quadrants to consider the firm's decisions.

		Black Gold Decisions	
		Ph	Pl
Liquid Energy Decisions	Ph	BG profit = 25 LE profit = 25 (share customers equally)	BG profit = 50 LE profit = 5 (customers prefer BG)
	Pl	BG profit = 5 LE profit = 50 (customers prefer LE)	BG profit=10 LE profit=10 (share customers equally)

So what are the best choices for BG and LE?

Consider BG: if LE sets Ph, BG's best profit is by setting its price Pl.
 if LE sets Pl, BG's best profit is by setting its price Pl

So, no matter what LE decides, BG is best off by setting its price Pl

Consider LE: if BG sets Ph, LE's best profit is by setting its price Pl.
 if BG sets Pl, LE's best profit is by setting its price Pl

So, no matter what BG decides, LE is best off by setting its price Pl

This leaves us in the bottom right quadrant. Clearly both firms would be better off if they both agreed to set the high price. If the firms got together to set prices, this is called collusion (firms acting together to fix prices, divide the market and/or otherwise restrict competition).

However, there is a strong incentive to cheat. BG is better off if it pretends it will charge the high price, and then cheat and charge the low price, thereby gaining more customers and higher profits $50 > 25$. Therefore, collusion only works when there are few incentives to cheat and/or punishment mechanisms for those firms that do cheat.

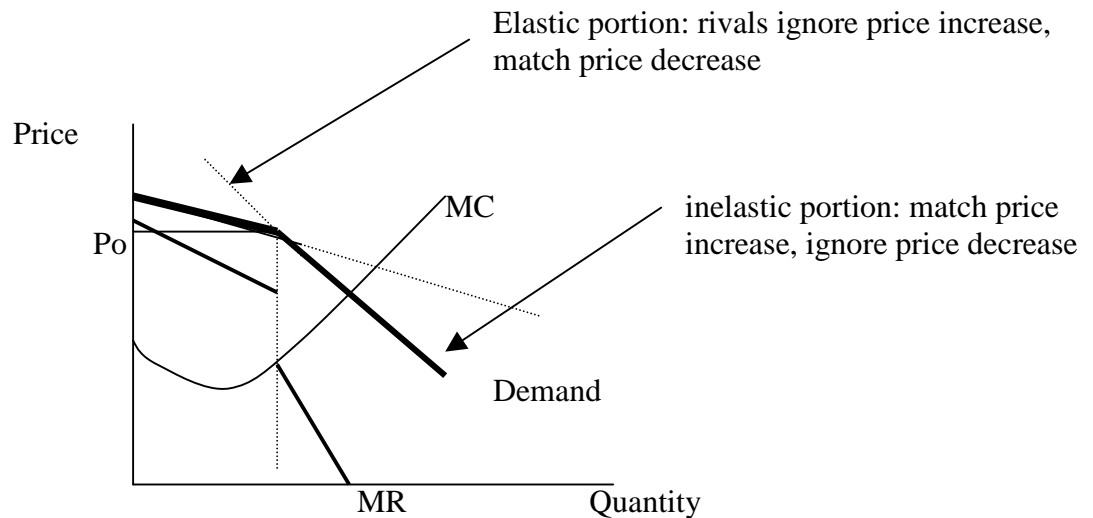
Three types of Oligopoly Models

1. Non-collusive (kinked demand curve)
2. Collusive
3. Price Leadership (dominant firm)

1. In a non-collusive oligopoly, firms are independent and do not set prices or divide the market, firms are competitive.

This implies that if any one firm lowers its prices, the other firms may decide to match that price decrease in order to keep the customers (market share) that it has. They will match the price decrease when it is profitable to do so. If they match the price decrease, the one firm that decreases its price won't make much more money because the other firms lower their price to keep market shares as before (flatter portion of demand curve). However, if they don't match the price decrease, the one firm that decreases its price will gain a larger share of customers (steeper portion of demand curve.) Conversely, if the one firm raises its price, the other firms may keep their price the same, trusting that they will attain more customers by keeping their price low. This is true for when the demand curve is relatively elastic and price changes affect consumers by a greater percentage.

This model is the Kinked demand curve model:



Note that in the elastic portion, rivals will ignore price increases, because when demand is elastic, an increase in price will decrease TR, while a decrease in price will increase TR. In the inelastic portion, rivals will generally not match a price decrease because a decrease in price will decrease TR.

This model explains why prices are generally stable in non-collusive oligopolies.

If a firm lowers its price from P_0 , at best sales will increase a very little, at worst, rivals will match price and everyone will keep the same customers and just lower profit. If a firm raises its price from P_0 , it will lose customers, and because demand is elastic there, according to the TR test, it will lose profit. Thus, prices tend to stick around P_0 unless there are changes in costs or demand.

This model is a neat way to explain oligopoly decision making but it has its flaws:

- a. It doesn't explain how price gets to P_0 in the first place
- b. When economic conditions are unstable, prices fluctuate far from P_0 and we sometimes see price wars

Price War- successive and continuous price cuts as rivals attempt to maintain/increase their market shares.

2. Collusive Oligopolies

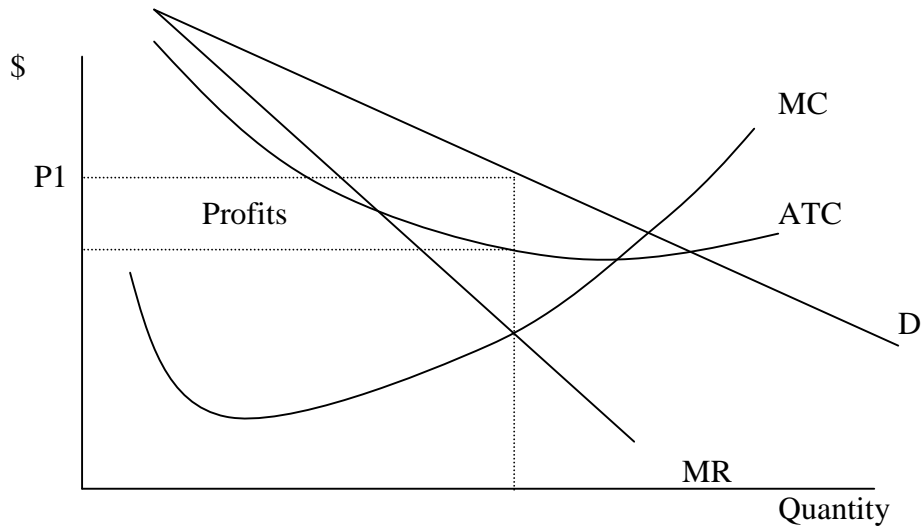
These are usually in industries with homogeneous products.

Collusion helps reduce firms uncertainty, increase profits, and may impede entry of new firms

Firms in this type of industry know that if they raise/lower their price, the demand curve will shift sharply because the product of each firm is homogeneous and customers will buy indifferently from any firm. Therefore, there is a heavy loss of profit to price wars in this industry.

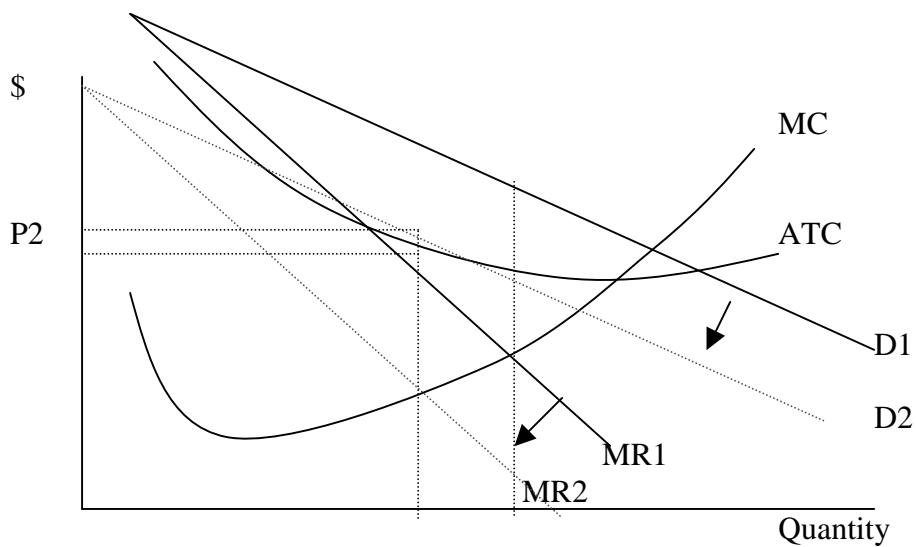
Consider a single oligopolists decision:

Graphically:



If an oligopolist were to change it's price, it's demand curve would shift down:

Graphically:



As you can see, profits are much smaller when the oligopolist increases its price.

Therefore, it is clear that oligopolists would be better off if they collude. This is of course, assuming that they all face similar cost conditions and can agree on the optimal price to maximize their profits.

Types of Collusion

- a. Overt- public and formal collusion, such as with the OPEC cartel

Cartel: group of producers that create a formal agreement specifying output and price of each of the member firms.

- b. Covert-hidden, non-public collusion

Cartels are illegal in Canada, but some industries have a tacit understanding or 'gentleman's agreement' on setting product prices. Any agreement on setting prices is illegal, and several Canadian companies have been fined large \$ for violation of the competition act.

Oligopolists may wish to collude on a lower than optimal price in order to keep new firms from entering the market.

However, collusion isn't a simple thing to set up.

Because firm's products are not completely homogeneous, firms have demand and cost differences, which means that they may also maximize profits at different prices.

This means that oligopolist firms may have difficulties coming to an agreement on just what price to set. The more firms there are, the harder it is for them to agree.

Moreover, there is a strong incentive to cheat. This is why collusion usually only works when it is easy to punish cheaters.

3. Price Leadership Model

In this model, there is an implicit understanding among firms to coordinate prices (without collusion) by having the dominant firm initiate price changes and all other firms follow (match the change)

Price Leader Behavior:

1. Infrequent price change (for fear that others may not follow)
2. Communication of price change ahead of time (to make sure other firms have opportunity to support)
3. Limit pricing (to discourage new firms from entering)

When price leadership is challenged, you can see price wars. Ex/ cereal price wars of 1995-1996 when Kellogg's was the leader, General Mills challenged by lowering prices (to try to gain market share), then Post challenged, and so forth.

In general, Oligopolies involve a large amount of non-price competition. Product development is one area of competition, and advertising makes up a large portion of non-price competition as well.

Oligopolists are large firms and therefore can afford to advertise.

Pros of advertising: provides information to customers so they can make better decision

Cons of advertising: many ads contain little real information and often try to mislead customers.

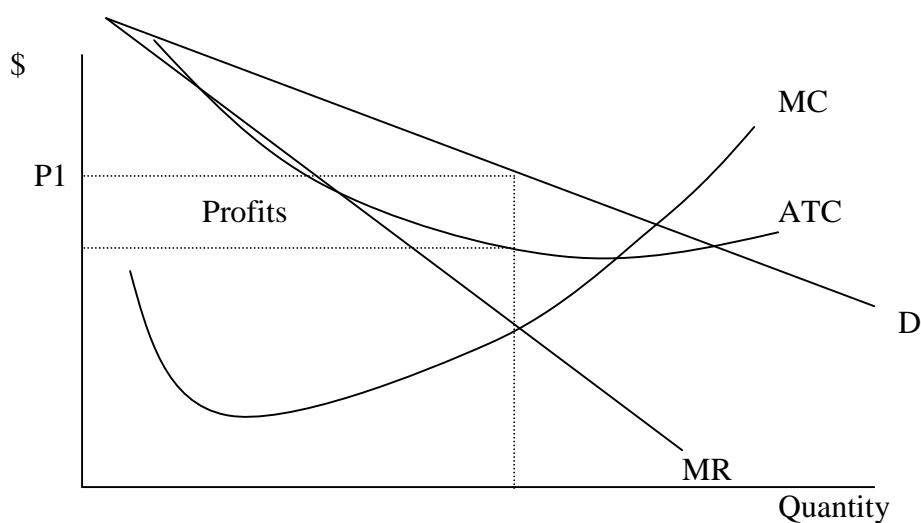
Advertising also constitutes another barrier to entry to new firms who cannot afford the air time. In addition, ad campaigns may effectively neutralize rivals, and turn out to be superfluous cost.

Efficiency of Oligopolies

Are oligopolies efficient?

If, as many people believe, Oligopolies produce as follows:

Graphically:



With cartels and price leadership, then it follows that like monopolies, oligopolies are both productively inefficient and allocatively inefficient. (because production doesn't occur at min ATC, and because $MB=P > MC$)

However, like monopolies, oligopolies may foster more product development and technology to differentiate themselves. They may also limit pricing to keep out new firms. And finally, increased competition may lower prices and break up cartels.