# Notes 2012 Topic 10: Market Structures

## Definition and Characteristics of Perfect Competition

In the perfect market structure, there is perfect market information and mobility of factors of production. This implies that there is perfect knowledge about the price of goods and services and cost of resources and there is perfect mobility of resources for the firms in the perfect market structure. There are also many firms and the product is homogeneous. The firms are also price-takers as no firms can control the production level and thus cannot set the price level.

(price is set by the industry while the output is based on the rule of profit maximization)

Under this market structure, the marginal and average revenue is constant as output increases, which means that the demand curve (AR) is perfectly elastic implying that the firms in this market structure are price-takers, abiding to the price level set by the industry as there is prefect information about the price level while the marginal cost will rise as there is over-utilization of fixed capacity of production in short run. As a profit-maximizing firm, the production level is at the level where the marginal cost is equal to the marginal revenue. As the marginal revenue is perfectly elastic, the firm is able to attain production efficiency and allocative efficiency in the long run. Since the average cost can be at the lowest level and price is equal to MC. (SR/LR)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Price | Qty | MR | AR | TR |
| 3 | 1 | 3 | 3 | 3 |
| 3 | 2 | 3 | 3 | 6 |
| 3 | 3 | 3 | 3 | 9 |
| 3 | 4 | 3 | 3 | 12 |

**Characteristics of production equilibrium in the PC market**

1. Price is set by the industry
* through the market forces of DD/SS
1. Profit-maximising condition is where MC=MR
* MC must cut the MR from below (MC is rising and then further rise beyond MC=MR, means additional loss will occur)
1. Allocative and production efficiency can be attained at production equilibrium based on profit maximisation

**Explain the notion of profit maximising rule in determining price and output decision.**

The profit-maximising rule explains how the firm determines price and quantity level based on the marginal principle which sets the price and quantity level that will maximise the net profit level

Under this rule, the firm will increase production when the MR is greater than the MC since additional net profit can be earned and decrease production level when the MR is less than MC since additional net loss may be incurred. Thus, it will attain production equilibrium at the level of output where MR is equal to MC

**MR > MC – presence of additional net profit – increase production**

**MR < MC – presence of additional net loss – decrease production**

**MR = MC – production equilibrium**

**Diagram for Perfect Market Condition (Normal/ Subnormal/ Supernormal in the short-run)**

S0

D0

Qty

Q0

P0

Price

D1

MC

ATC

P

Q

0

A

Price

Qty

DD = AR =MR

Q1

D1=AR1=MR1

Firms

-Production Equilibrium🡪MC=MR

Industry

-Market Equilibrium🡪dd/ss

Supernormal profits

= TR – TC

= OPAQ – OCBQ

= CPAB

Subnormal profits

= TR – TC

= OPAQ – OCBQ

= CPAB (losses)

MC

ATC

P

Q

0

A

C

B

DD = AR =MR

Qty

Price

SR – Profit condition – sub-normal$ π$, normal$ π$, supernormal $π$

LR – normal $π$

## Definition and Characteristics of Monopoly

In the monopoly form of market structure, there is imperfect market information and immobility of factors of production. There is only one firm and the product is **unique.**

 The firm has strong market control as it can impose strong barriers to entry, either naturally or artificial. The firm in this industry is price-setter whereby the firm can set the price or the quantity level.

Under this market structure, the marginal revenue and average revenue is downward sloping from left to the right due to the market power and thus, allowing it to exercise as a price setter while the marginal cost will rise as there is over-utilization of fixed capacity of production. As a profit maximizing firm, it will produce at the level of output where the marginal revenue is equal to the marginal curve. However, the firm is unable to attain production efficiency and allocative efficiency since the market equilibrium level of production at MC = MR does not equal the production efficiency level where output level is at min AC or P = MC, as the firm is producing at excess capacity of production (SR).

P0

MC

Price

AC

MR

AR

Q0

Qty

Profit-maximising condition where MC=MR 🡪 supernormal $π$

As the monopoly has complete market power, it is feasible for the firm to practise price discrimination. It has complete control of the market and there is no possibility of re-sale of the products. The firm can set different prices based on the different elasticity of demand, different level of quantity or the level of consumer preference. As a result of price discrimination, the level of consumer surplus will be minimized or completely eroded by the firm, depending on the degree of price discrimination imposed by the firm.

**Characteristics**

1. Price and output is determined by the firm
2. Determination is based on profit-maximisation (MC=MR)\_
3. MR is downward-sloping – presence of market power
* Source of market power for monopoly

🡪Barriers to entry (e.g. Intellectual property rights) – depends on PED

1. No allocative and production efficiency
* Q is not @ level where P=MC or min AC

Question for Discussion
**Explain how the firm or firms in the imperfect market structure set price and output decision**

**1. Explain the various types of market structures**

Under the imperfect market structures, it can be classified as monopolistic, oligopolistic or monopolistic competitive market where the industry may have one firm, few firms or many firms. For the monopoly, the produce of the firm is unique and there is high degree of market power while the product of the firm in the oligopoly is classified as homogeneous or differentiated and has strong market powers. However, the product of the firms in the monopolistic competitive market is classified as differentiated and there is small degree of market power.

**2. Explain how the firms in the imperfect market is affected by the market power of the firms**

Due to the influence of the market power, the firms in the imperfect market structure will have a downward-sloping MR and AR, indicating that the firm is capable of practicing price-setting whereby the firm can either decrease price to increase quantity demanded or increase price but face a lower level of quantity demanded. For the monopoly and oligopoly, the market power is derived from the barriers to entry while the market power for the monopolistic competition is based on product differentiation.

**3. Explain how the price level is determined by the production equilibrium based on profit maximization**

Based on this downward-sloping MR and AR, the firms in the imperfect market can set the price level when the production equilibrium is attained; abiding to the profit-maximising rule, Under this rule, the firm will increase production when the MR is greater than the MC since additional net profit can be earned and decrease production level when the MR is less than MC since additional net loss may be incurred. Thus, it will attain production equilibrium at the level of output where MR is equal to MC

**MR > MC – presence of additional net profit – increase production**

**MR < MC – presence of additional net loss – decrease production**

**MR = MC – production equilibrium**

AR=DD=P

Q0

Qty

MR

MC

Price

PC

P0

As seen from the diagram, it can be observed that the MR and AR are downward-sloping while the MC is upward-sloping as there is a higher rate of utilization of resource capacity. The production equilibrium is set at the quantity level of Q0 while the price level is set at P0 where MR = MC, abiding the rule of profit maximization when the firm determines price and output level.

optional (different profit level)

The firms in the imperfect market structures will make different levels of profit in the short-run and long run when it attains production equilibrium. In the short run, it can make subnormal profit, normal profit or supernormal profit. But in the long run, the firm can make only normal or supernormal profit as the firm will have to shut down when it incurs subnormal profit.

(production and allocative efficiency)

It is imperative to note that the firm in the imperfect market structure will not be able to attain allocative efficiency as the price level is set at profit-maximising level does not equal to the marginal cost. It is not able to attain production efficiency in the short-run as the firm is producing at the excess capacity at the profit-maximising level of output though they are able to achieve production efficiency in the long run from the profit-maximizing level of production.

Conclusion

In sum, the profit-maximising rule will influence how the firm determines its price strategy in the imperfect market structure. The downward-sloping AR and MR condition will mean that the firms may not satisfy other aims of the firms when it set price level based on profit-maximising rule.

2.1 **Barriers to Entry (Reasons for the existence of monopoly** (Natural /artificial)

* + Legal barriers - created by the presence of patent rights and intellectual property rights

* + Technical barriers (Economies of Scale) – the firm is able to gain advantage in the technological advancement to lower cost of production to a level where other firms cannot attain and thus, prevent the other firms from joining this industry
	+ Ownership of or control over key factors of production – the monopoly can control certain essential resources which are critical in the production of the goods and thus, making it impossible for other firms to enter the industry.
* Existence of high transport costs and tariffs – it will raise the price of the goods sold by the foreign companies and thus, enabling the local firm to develop itself as the sole firm which can supply the good at the lower price level.
* E.g. Rare earth 🡪 Controlled by China industries🡪determines production capacity for micro-chips
	+ Lower costs for an established firm – this is attained by economies of scale which will enable to lower the cost of production and thus, selling at a lower price to force out competition.
	+ Product differentiation and brand loyalty – the product can be differentiated and make it most favoured by consumers and thus, cultivating the brand loyalty which will create market power for the firm.
	+ Contrived barriers (Deliberate restrictive practices) – this is achieved when the firms or the firm in the industry creates certain professional requirement and condition of business which will allow the firm the exclusive control of the market

2.1.1 **Explain and evaluate the influences of barriers to entry in production equilibrium for firms in the imperfect market**

1. Intellectual property rights 🡪 barriers to entry
* Market power 🡪 ability to set price or output
* Downward-sloping MR/AR 🡪 production equilibrium at profit-maximization (MC=MR) will not be at production efficiency (min AC) or allocative efficiency (P=MC)
1. Barriers to entry – create market power 🡪 seen in terms of downward-sloping MR and AR 🡪 production equilibrium @ MC=MR will not be equal to production @ P=MC or min AC as the production

is at the excess capacity

Under-capacity

Over-capacity

**why the price is higher at the rural area and why it is lower at the urban city?**

**2.2 Price Discrimination: Definition & Characteristic**

* Price discrimination: the practice of charging different prices to different groups of customers for the exact same product. (3rd degree) (separation of market – local and international)
* Price discrimination occurs when a producer sells different quantities of a specific product at two or more prices, for reasons not associated with cost differences. (2nd degree) (quantity of the market)
* Price difference rest merely on different buyers’ valuation of the same product, they are discriminatory. (1st degree) Private home tuition)
* Price discrimination, if successful, will increase the firm’s total profits.

**2.2.1 Conditions for Price Discrimination**

* Two or more prices being charged
* The good in all situation must be exactly the same good
* Price differences must not arise out of cost differences
* The seller must be able to control the supply of the good and thus prevent the resale of the good from one market to another
* Ability of the monopolist to separate markets:
	+ geographically
	+ by type of demand
	+ by time
	+ by nature of product (Different value of PED)
* Basis of assessment for discussion on whether price-setting is an act of price-discrimination
* E.g. Cinema tickets (weekend/weekdays)
* Starcruise (weekend/weekdays)

**2.2.3 Degrees of Price Discrimination**

* 3rd degree price discrimination: The firm sells the same good to different consumers at different price. (separation of market)
* 2nd degree price discrimination: Also known as ‘multi-part (or block) pricing. When there are two or more markets, monopolist charges different prices for different blocks of the same good according to how much the consumer wants to buy. (quantity-based – photocopying)
* 1st degree or perfect price discrimination: When each quantity sold is sold at a different price, and all consumer surplus is captured by the monopolist. (auction)

**Question for Discussion:**

* **2.2.4 Advantages of Price Discrimination**
* Price discrimination makes it possible to supply a good which otherwise could not have been produced. For example, the services of a surgeon. (allow the surgeon to charge high price to sustain the provision of services – ensure that the loss from the lower price market is covered by the high price market)
* Price discrimination makes it possible for a greater number of consumers to benefit from the product/services.
* May be used to cultivate customer loyalty. (encourage greater consumption)
* Can allow the firm to produce above a larger quantity so as to reap EOS.
* (lower AC – raise profitability)
* **2.2.5 Disadvantages of Price Discrimination**
* It may be a form of consumer exploitation. ( Some consumers will pay at a higher price and there is allocative inefficiency)
* It may also increase the cost of production (cost of separation of market)
* (cost in engaging in the change of product imagery – inform the consumers about the change)

**Question for discussion**

**Is Star Cruise a form of price discrimination?**

**Is price discrimination feasible in the Pharmaceutical industry?**

* + - Monopoly/ Monopolistic Com (Normal/ Subnormal/ Supernormal profit condition in the short-run)
* Price elasticity of demand curve is more price inelastic for monopoly than firms in monopolistic competition

Cost/Revenue

Cost/Revenue

Qty

DD=AR

MR

P0

Q

0

MC

MC

AC

AC

P0

0

Qty

Q

MR

DD=AR

Supernormal Profits

Profits = TR – TC

= OPAQ – OCBQ

= CPAB

Normal Profits

Profits = TR – TC

= OPAQ – OPAQ

= 0



Subnormal Profits

Profits = TR – TC

= OBEQ – OCDQ

= BCDE (losses)

Shut Down losses = ACDF

Since ACDF > BCDE, they will continue producing.

Note: AVC closes the gap with AC towards higher quantity because AFC decreases as quantity increases.

## Definition and Characteristics of Oligopoly

In the oligopolistic form of market structure, there is **imperfect market information and immobility of factors of production.** There are a **few firms and the product is differentiated or homogenous.** The firms have strong market power as they **can create barriers-to-entry but the firms are mutually interdependent**. The firm in this industry is **price-setter whereby the firm can set the price or the quantity level.**

Under this market structure, the marginal revenue and average revenue is downward sloping from left to the right as it can exercise as a price setter due to the market power while the marginal cost is rising due to over-utilization of fixed capacity of production in short run. As a profit maximizing firm, it will produce at the level of output where the marginal revenue is equal to the marginal cost. However, the firm is unable to attain production efficiency and allocative efficiency since the market equilibrium level of production at MC = MR does not equal the production efficiency level where output level is at min AC or P = MC. (production is at excess capacity)

The firms in the oligopolistic market structure compete differently based on the nature of competition. It may collude as a cartel whereby the firms establish a virtual monopoly by agreeing upon one common uniform price in the market. E.g. OPEC oil cartel.

Conditions necessary for successful collusion:

1. The fewer the number of sellers – easier to agree on terms
2. The more identical their products i.e. standardised products – less controversy
3. The more nearly identical their costs of production – easier to set price
4. The more certain firms can be that their rivals will adhere to the agreed-upon tactic of avoiding price competition – efficient monitoring system

They may also compete under different price leadership whereby the firms in the industry tend to set their prices according to that charged by a firm called the price leader. The firms may operate under such situations:

1. **Dominant firm**: This is where firms (the followers) choose the same price as that set by the dominant (largest) firm in the industry, without the consultation of other firms. (E.g. iPod)
2. **Barometric price leader**: The firm makes price changes more quickly and successfully than its rivals in response to changing costs and demand conditions. The other firms watch it and emulate its decision. Barometric price leadership is indicated by a number of market characteristics, for example, occasional switching between firms in the role of price leader. (E.g. Computer chips/Hard disk)
3. **Low-cost price leader**: The firm with insignificant cost has an advantage over its rivals and set the price. (E.g. Seagate)

The firm may also engage in non-collusive market competition whereby there is NON-collusive conduct.

**Kinked-Demand Curve Model**

This model explains why once a price-output combination has been decided upon and the oligopolistic firms will not want to experiment with further price changes.

MC

AC

Price

Qty

D=AR

MR

QE

Explain how the kinked demand curve is formed.

When the firm increases price, the rival firm will not increase price as the rival firm can gain as the customers will switch the consumption from the firm to the rival firm. This will lead to a large reduction in quantity demanded since the degree of substitution is large, contributing to the demand curve for this portion to be price-elastic. However, when the firm decreases the price, the rival firms will follow suit as they will lose out if the customers of the rival firms may switch the demand to the firm. This means a smaller degree of substitution which will lead to a less than proportional increase in quantity demanded, contributing to the demand curve for this portion to be price-inelastic. It also implies that there is price rigidity as the firm is unlikely to change price as there is little to gain from price changes unless there is large percentage change in cost condition. This reflects that there is high degree of mutual interdependency which contributes to the condition of price rigidity, thus the development of a kinked demand curve.

As seen from the diagram, the MR and AR is kinked with the portion being price-elastic when price ↑ and the portion being price-inelastic when price ↓. The MC is upward-sloping when the MC rises, and thus production equilibrium is set at MC=MR, where profit maximization condition is attained.

* High degree of mutual interdependency🡪 creates the condition of price rigidity🡪 reactionary to competitors
	+ the firm ↓P 🡪 competitors will follow suit🡪 low degree of substitution (competitors’ consumers will not switch to the current firm – **Ped –inelastic**
	+ the firm ↑P 🡪 competitors will not increase price – high degree of substitution (consumers of the current firm will switch to buy from competitors ) 🡪 **Ped-elastic**

⇨No advantage to be gained from changing price🡪price-rigiodty🡪 therefore, will settle the price level where profit maximization is attained @ MC=MR

⇨Demand curve is kinked due to different value of PED at different portion of demand curve

1. **Explain how patent rights determine production equilibrium (price and quantity)**

Patent rights🡪barriers to entry🡪market power for the firm which allow firm to set price or quantity level🡪MR and AR will be downward sloping🡪production equilibrium based on profit maximisation at MC=MR is at excess capacity in SR🡪does not equal allocative efficient level where P=MC or does not equal to production efficiency where quantity is at minimum AC.

1. **Impact**
2. Allocative inefficiency (DWL)
3. Higher price and lower quantity (consumer exploitation)
4. No production efficiency but AC can be lowered due to dynamic efficiency (R&D)
5. Provide incentive for R&D/profit-earned🡪more fund for R&D
6. May raise welfare for the society🡪huge positive externalities

## Definition and Characteristics of Monopolistic Competition

In the monopolistic form of market structure, there is imperfect market information and immobility of factors of production. There are many firms and the product is highly differentiated. The firm also possesses slight market power as it can create its own market share through product differentiation but the control of the market is limited. The firm in this industry is price-setter whereby the firm can set the price or the quantity level but has a high degree of substitution, contributing to the presence of a price-elastic demand curve.

Under this market structure, the marginal revenue and average revenue is downward sloping from left to the right as it can exercise as a price setter due to the market power while the marginal cost rises due to over-utilization of fixed capacity of production in short run. As a profit maximizing firm, it will produce at the level of output where the marginal revenue is equal to the marginal curve. However, the firm is unable to attain production efficiency and allocative efficiency since the market equilibrium level of production at MC = MR does not equal the production efficiency level where output level is at min AC or P = MC.

As there are no barriers to entry and the impact of profit condition in short run, **the firm will make only normal profit in the long run.** When the firms are making losses in the short-run, there will be firms which exit from the industry. This will contribute to the increase in market demand for the remaining firms and the demand curve will become more price-inelastic as there is lower degree of substitution until the cost and revenue condition adjust to the normal profit level. On the other hand, when the firms make supernormal profit, there will be the entrance of more firms as they are attracted by the profit level. This will contribute to the fall in the market demand for the firms and the demand curve will become more price-elastic as there is higher degree of substitution until the cost and revenue condition adjust to the normal profit level.

* Firms make normal ∏ in the MC in LR
* Different profit condition in SR
* Ease of entry and exit
* SR – Supernormal ∏ condition

– Entrance of new firms

* ↓ in market demand for the firm in industry (D0 to D1)
* Demand becomes price-elastic because of high degree of substitute (D1 toD2)
* Adjust until firms make normal ∏ where production is at profit-maximising level, where MC=MR

AC

P0

Q0

D2

D1

D0

* SR2  - Subnormal ∏ condition

 - Exit of current firms

* ↑market demand for the remaining firms (D0 to D2)
* Demand becomes price-inelastic due to low degree of substitution (D1 to D2)

Q0

D0

AC

P0

D2

D1

**Explain and evaluate the effects of a successful advertising campaign on the product equilibrium of the firm in the MC market in the SR and LR.**

Introduction

1. definition the MC market structure

2. state the firm in this market based on profit maximization to attain production equilibrium and the change in the market activities and the features of this market will affect the production equilibrium in SR and LR]

Main body

1. explain how the production equilibrium will be attained

2. explain how the successful advertising campaign will affect the MR and AR and MC and AC (MR and AR will shift to the right while the AC and MC will rise as advertising campaign is a fixed cost – AR > AC – supernormal profit)

3. explain how the LR affects the production eqm – AR and MR will falls as more firms enter the market and become price elastic till normal profit is set 4. evaluation

Conclusion