

## Oligopoly

Before, when we looked at Perfect and Imperfect Competition, we noticed that firms in these markets acted independently of each other. That is, each firm did not take the actions of other firms in the industry into account. However, if we look at the airline or banking industry, we see that there are many buyers purchasing from only a few large firms and each firm is conscious of what the other firms are doing. If one bank lowers its charges (price), we see that other banks respond to this change by either changing their prices or by offering some other incentive to attract customers.

From this we say that these firms are interdependent. When there is a market containing a small number of large firms acting interdependently, it is called an Oligopoly.

**An Oligopolistic Market:** is a market with a large number of buyers purchasing from a small number of large firms, and these firms make decisions to increase sales while taking into account the possible reactions of competitors.

### Assumptions

- 1) **Few Sellers in the Industry:** Because of this each seller can influence the price of the commodity or the output sold.
- 2) **Interdependence between Firms:** Firms in oligopoly do not act independently of each other. They will each take into account the likely reactions of their competitors, hence prices tend to be rigid.
- 3) **Product Differentiation Occurs:** The commodities which firms sell are close substitutes. Firms will engage in advertising to persuade consumers to buy their product rather than a competitor's product.

**Product Differentiation:** means that products sold by competing firms are similar but have differences. There are close (but not perfect) substitutes available.

- 4) **Barriers to Entry:** These are common in an oligopolistic market as existing firms will wish to maintain their share of the market. Examples of barriers include: high costs of setting up in the industry, brand proliferation etc.

**Barriers to Entry:** Are the forces at work which prevent or deter other firms from entering into the industry

5) **Collusion may Occur:** Firms within the industry may meet to control the output in the industry or control prices e.g. OPEC.

**Collusion:** is any action taken by separate and rival companies to restrict competition between them with a view to increasing their total profits

**Limit Pricing:** occurs when existing firms in an Oligopolistic market charge a price lower than the price they could charge in order to discourage the entry of new firms into the market or to force unwanted entrants out of the market.

6) **Non-Price Competition is More Common than Price Competition:** Due to the fear of how competitors will react, firms tend not to engage in price competition but rather they engage in non-price competition to gain consumers.

**Non-Price Competition:** occurs when firms try to increase their market share without changing their price.

**Price Competition:** is when firms compete with other firms on the basis of price

### **Examples of Non-Price Competition**

- a) Sponsoring Community Events
- b) Free Gifts
- c) Special introductory price for new customers
- d) Increasing the quality of the service

## Barriers to Entry

In the assumptions we said that barriers to entry exist in an Oligopolistic market. These are the things that stop other firms entering the industry. We will now look at what barriers to entry exist in Oligopoly.

- 1) **High Start Up Costs:** Some Oligopolistic firms operate on such a large scale that the costs of starting up in the industry faced by potential entrants is so high that it would be unprofitable to set up a new firm in opposition to the existing ones.
- 2) **Limit Pricing:** When new firms enter the industry, existing Oligopolistic firms may all agree to each lower their price, in the hope that the new entrant is unable to match this price and as such is forced out of the industry.
- 3) **Economies of Scale:** Existing firms may enjoy huge economies of scale in advertising which induces brand loyalty and reduces customer's willingness to try new brands.
- 4) **Channels of Distribution:** Existing firms may control the supply of goods to retailers and refuse to supply retailers that carry the products of new firms.
- 5) **Brand Proliferation:** This is where each existing firm produces and advertises several brands thus limiting the market available to potential new entrants.  
E.g. Both Proctor and Gamble; and Unilever produce washing detergent.

Proctor and Gamble produces	
Daz	Ariel
Tide	Dreft
Bold	Fairy and more

Unilever Produces	
Surf	Oms
Persil	Lux and more

**NOTE:** Proctor and Gamble and Unilever operate in what is called a duopololy. It is an oligopoly with only two firms.

**Brand Proliferation:** is where each existing firm produces and advertises several brands thus limiting the market available to a new entrant.

It is important to note that there is no one theory of Oligopoly that accurately describes the equilibrium of an Oligopolistic firm in all cases. This is unlike the other market structures that we have studied (Perfect Competition, Imperfect Competition and Monopoly) where we can accurately predict their actions and equilibrium in both the Short Run and the Long Run.

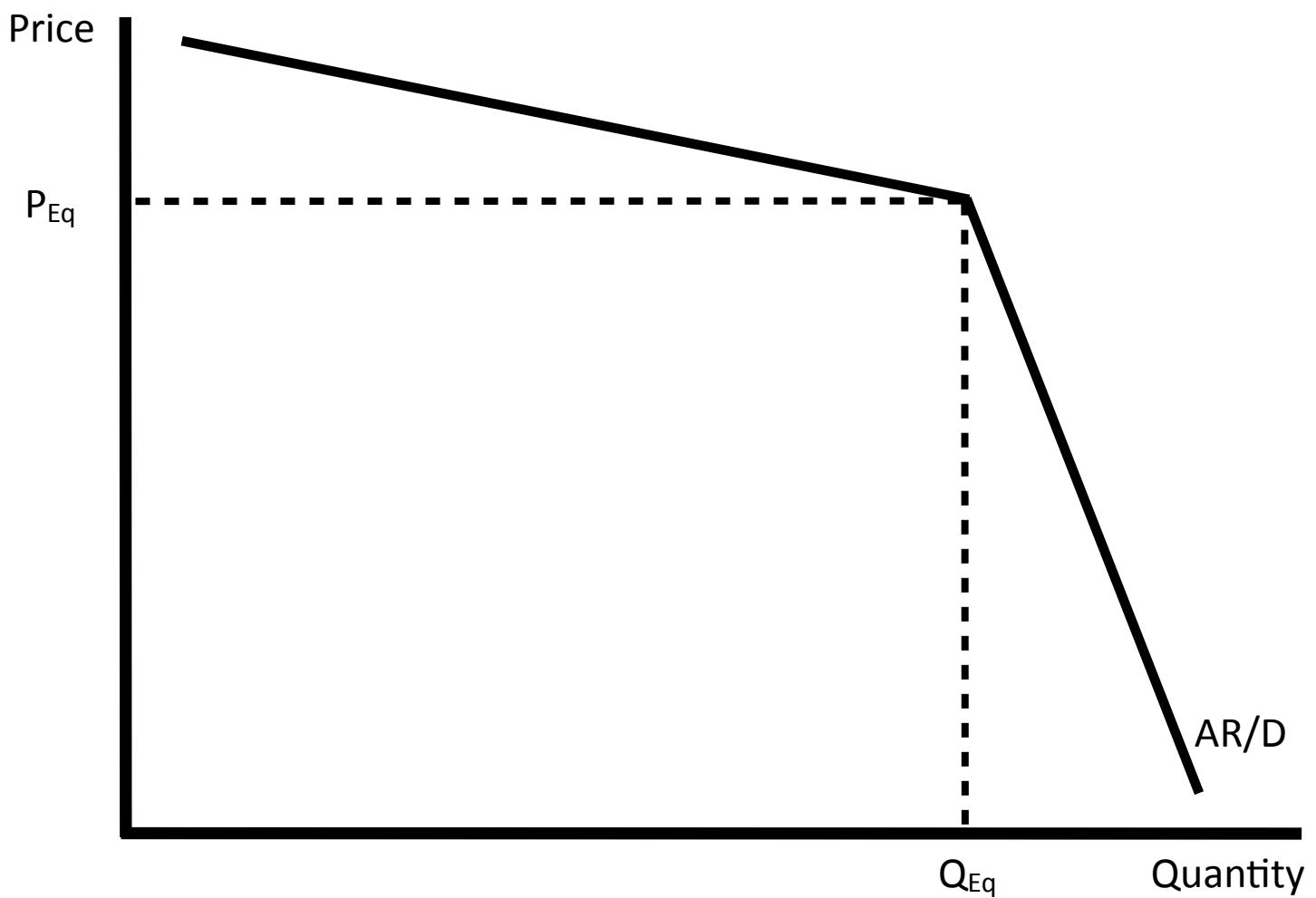
The behaviour of any Oligopolistic firm depends on the industry it is in (banking, petroleum, insurance, food chains) and how it reacts to its competitors decisions and how it believes its competitors will react to its decisions.

We will now look at a number of ideas that have been put forward to try to explain the different aspects of Oligopolistic markets.

## Explanation for Sticky Prices – The Kinked Demand Curve (Sweezy Model)

The explanation that follows is purely to help you understand the theory of the Kinked Demand Curve faced by an Oligopolistic firm. You do not need to learn this at all. Just understand it and then learn off the explanation of the Kinked Demand Curve that follows.

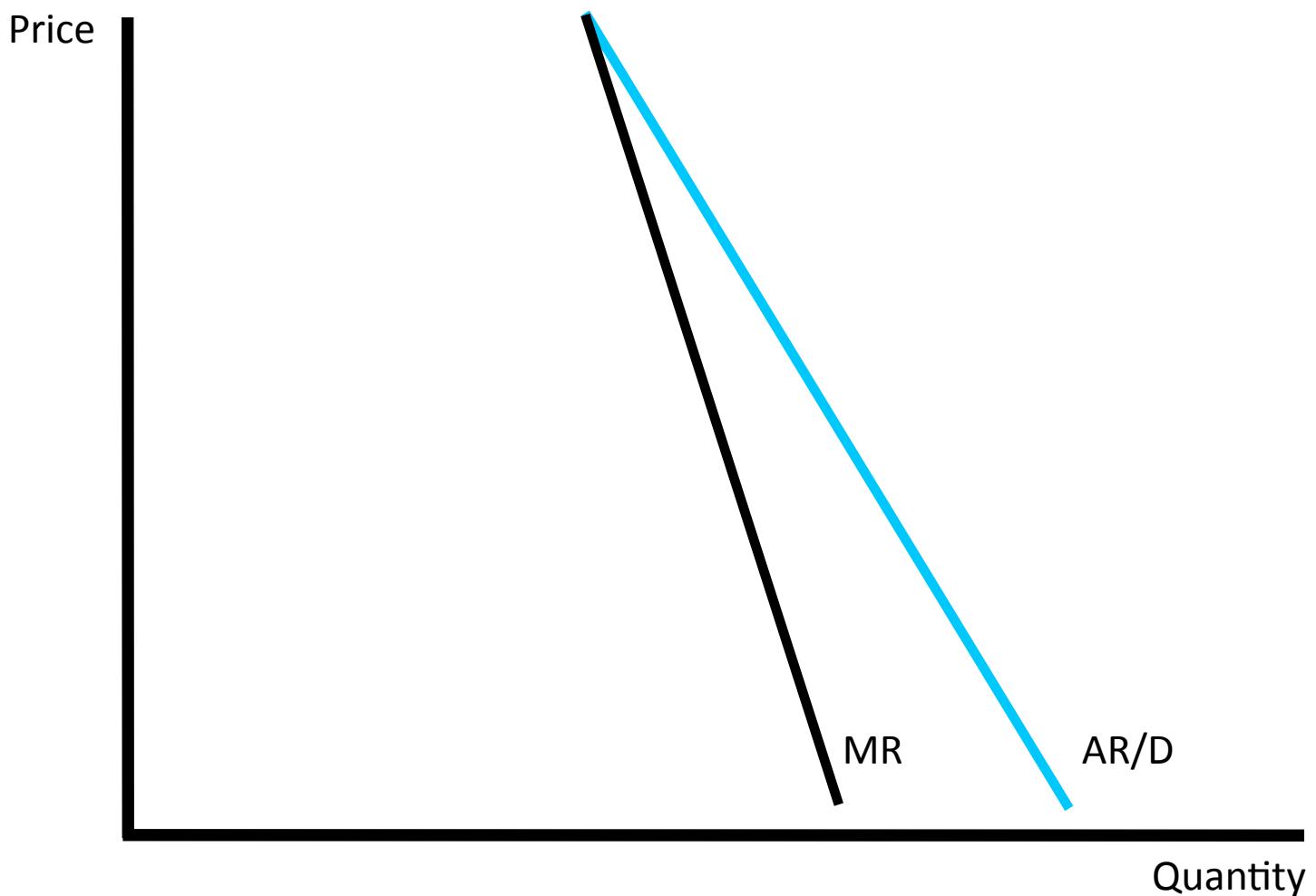
In the assumptions we said that prices in an Oligopolistic market tend to be rigid (tend not to change over time). An expression used to describe this attribute is that Oligopolistic markets tend to have sticky prices. In order to try to explain this phenomenon, economist Paul Sweezy put forward the idea of the Kinked Demand Curve. See graph below.



We will now derive how he came to this conclusion.

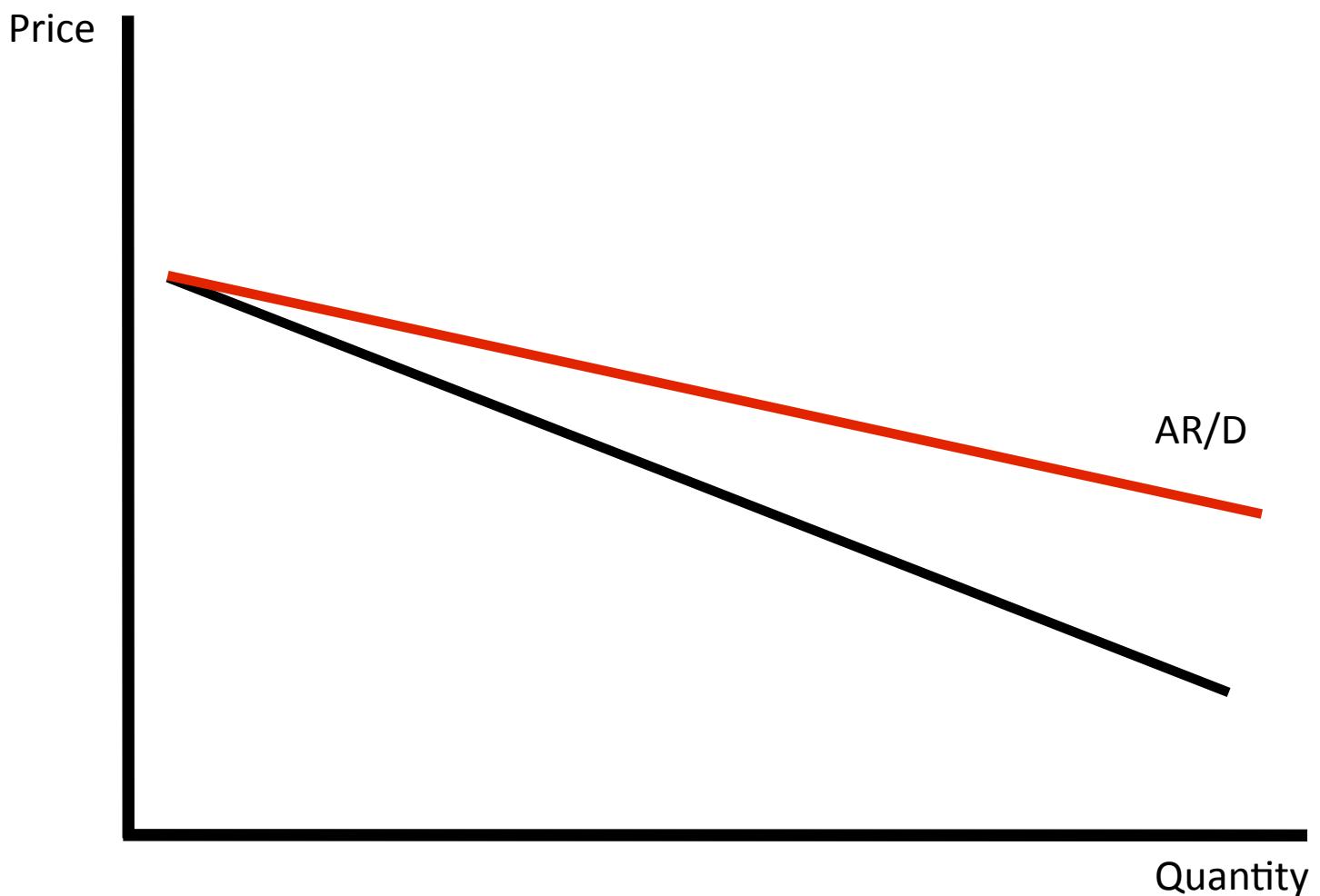
1) We know from the assumptions that firms act interdependently and as such each firm takes the actions of the other firms into account. Therefore if one firm decreases price to try to gain a greater share of the market, other firms will also decrease their price. As such, there is no benefit to any of the firms following a price decrease. Therefore, in relation to decreasing prices, Oligopolistic firms face an Inelastic Demand Curve (Average Revenue Curve). See graph below.

### Inelastic Average Revenue and Marginal Revenue Curves

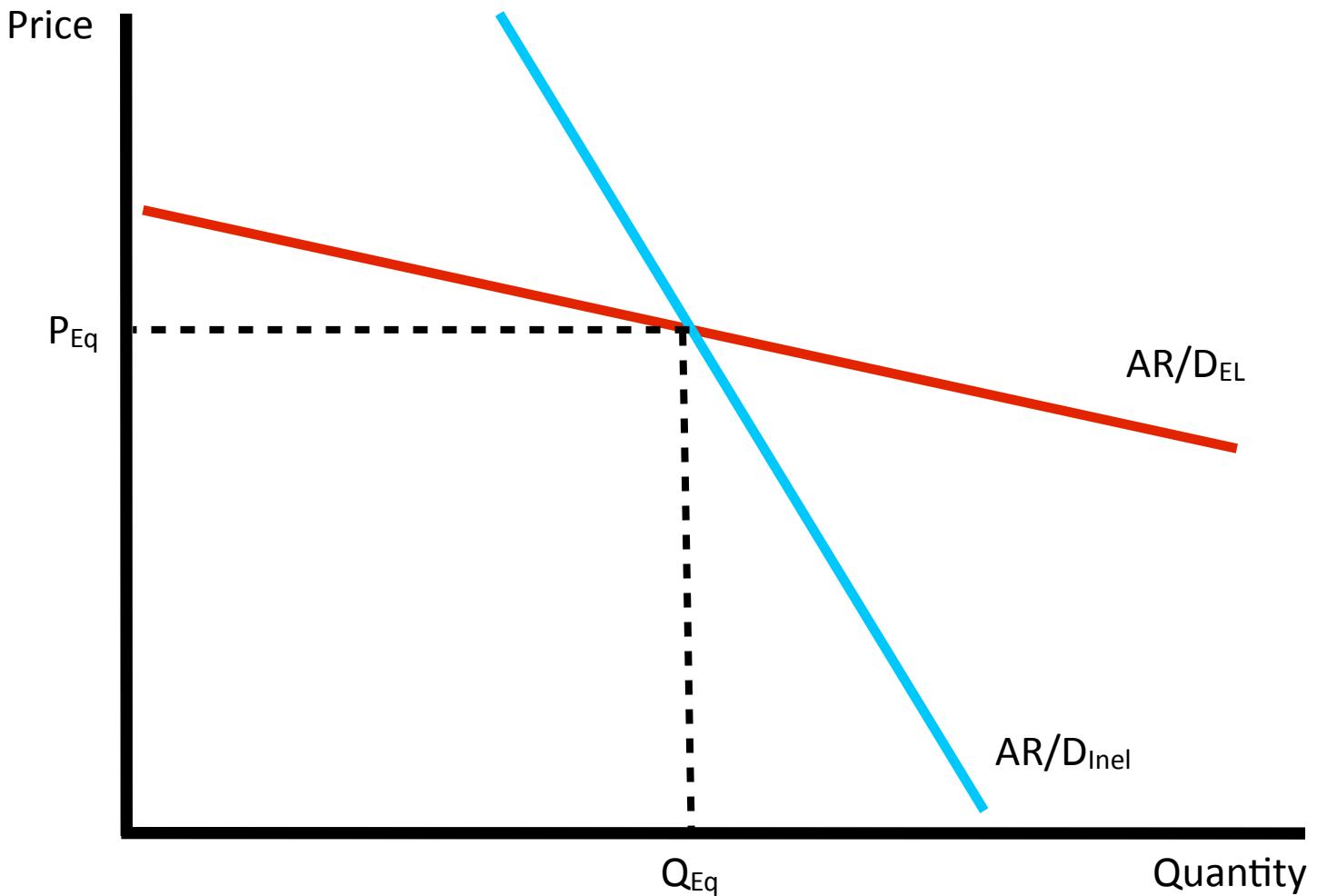


2) Also, if a firm increases its price, other firms will react to this by not changing their price. As such the other firms will be selling a similar good for a cheaper price and enjoy an increased market share. As such the firm that increased its price will lose a lot of customers to its competing firms. Therefore, in relation to increasing price, oligopolistic firms face an Elastic Demand Curve (Average Revenue Curve). See graph below.

### Elastic Average Revenue and Marginal Revenue Curves



3) Therefore, Oligopolistic firms really face two different Average Revenue Curves (Demand Curves). The Inelastic Demand Curve for price decreases and the Elastic Demand Curve for price increases. See graph overleaf.



4) Therefore, all firms are reluctant to change their prices as any change in price results in a loss in revenue. As such all firms will settle for the price where the two Demand Curves (Average Revenue Curves) intersect. Even if an individual firm suffers an increase in costs, the firm would prefer to absorb this drop in their profits instead of increasing their price and lose sales. If costs fall, the firm will not pass on the lower price to the consumer as this may cause a price war with competitors. This reluctance of Oligopolistic firms to change price is what is known as Price Rigidity.

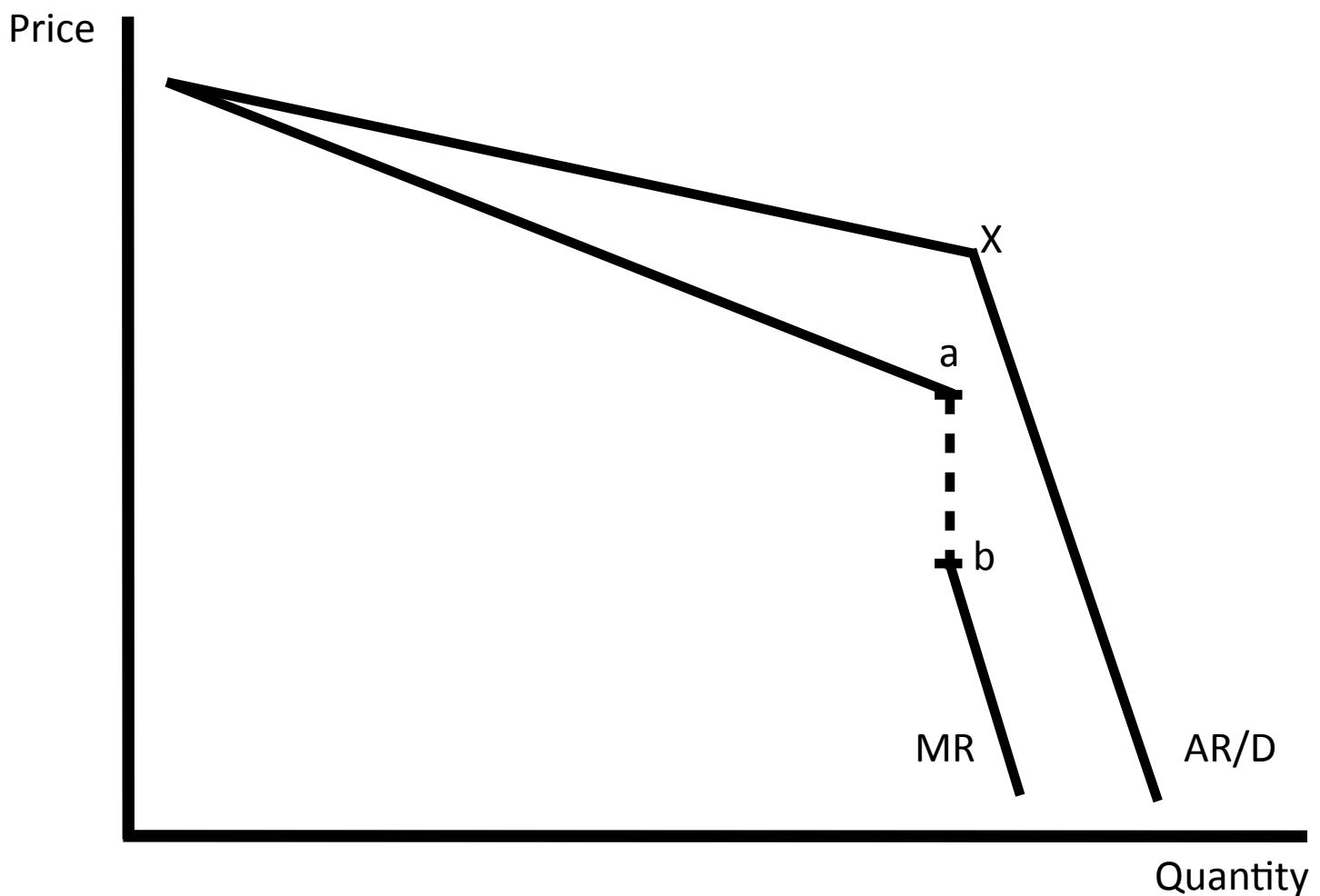
**Price Rigidity:** refers to the tendency for prices not to change, even if the firm's costs change, in order to avoid reaction from competitors.

5) The firm knows that if it increases its price above  $P_{Eq}$ , it will face the Elastic Demand Curve (Average Revenue Curve). Therefore, the Inelastic Average Revenue and Marginal Revenue Curves above this price no longer apply to the firm.

6) Also, the firm knows that if it decreases price below  $P_{Eq}$ , it will face an Inelastic Demand Curve (Average Revenue Curve). Therefore, those parts of the Elastic Average Revenue and Marginal Revenue Curves below this price no longer apply to the firm.

7) This leaves the firm facing what is called a “Kinked Demand Curve” and a “Kinked Marginal Revenue Curve”. See the graph below.

### Kinked Average and Marginal Revenue Curves

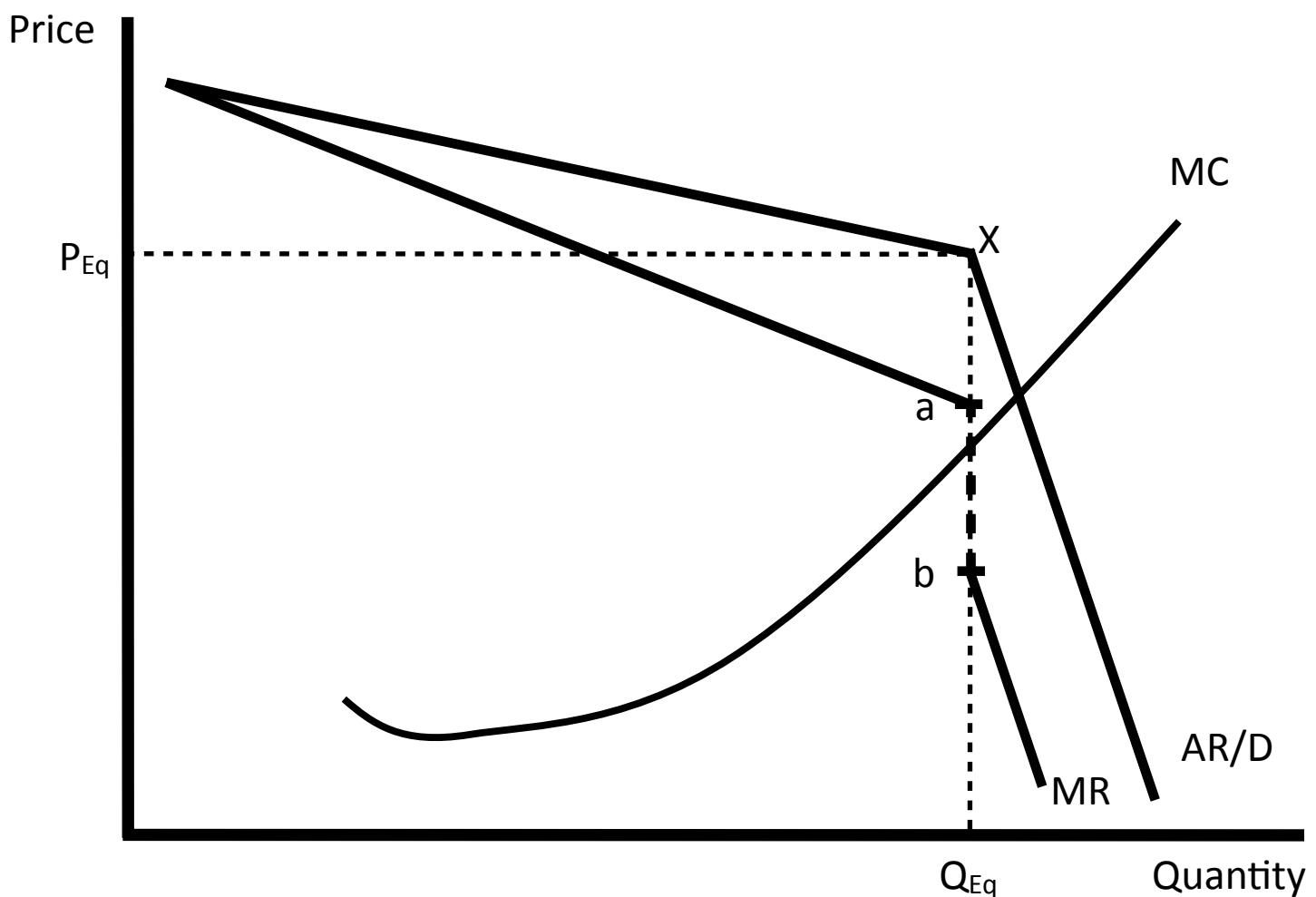


8) If we look at the Marginal Revenue Curve above, we see that between point a and b it is a vertical line down. The reason for this is that, for a downward sloping Average Revenue Curve, mathematically, Marginal Revenue must be sloping steeper than Average Revenue. As Average Revenue drops so steeply at point X, this causes Marginal Revenue to fall vertically for a portion (the distance between a and b). The whole line,

including the vertical drop, is the Marginal Revenue Curve faced by an Oligopolistic firm; it's just an unusual shape.

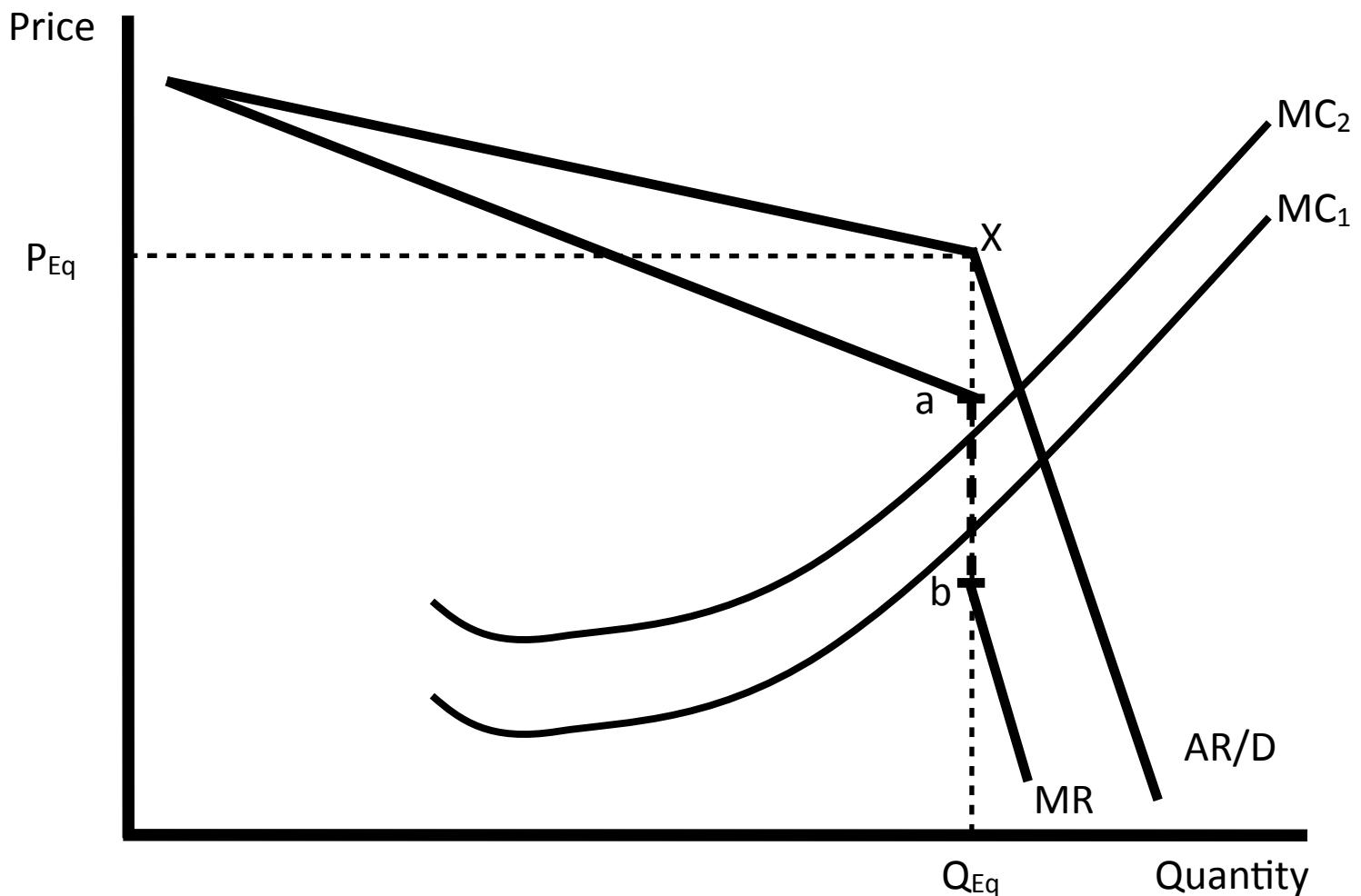
9) Assuming that the firm is a Profit Maximiser (which as we said in the assumptions is not always true), the firm will produce where  $MC = MR$  and  $MC$  is rising. This gives the quantity  $Q_{Eq}$  and price  $P_{Eq}$ . See graph below.

### Kinked Demand Curve with Price and Quantity for an Oligopolistic Firm



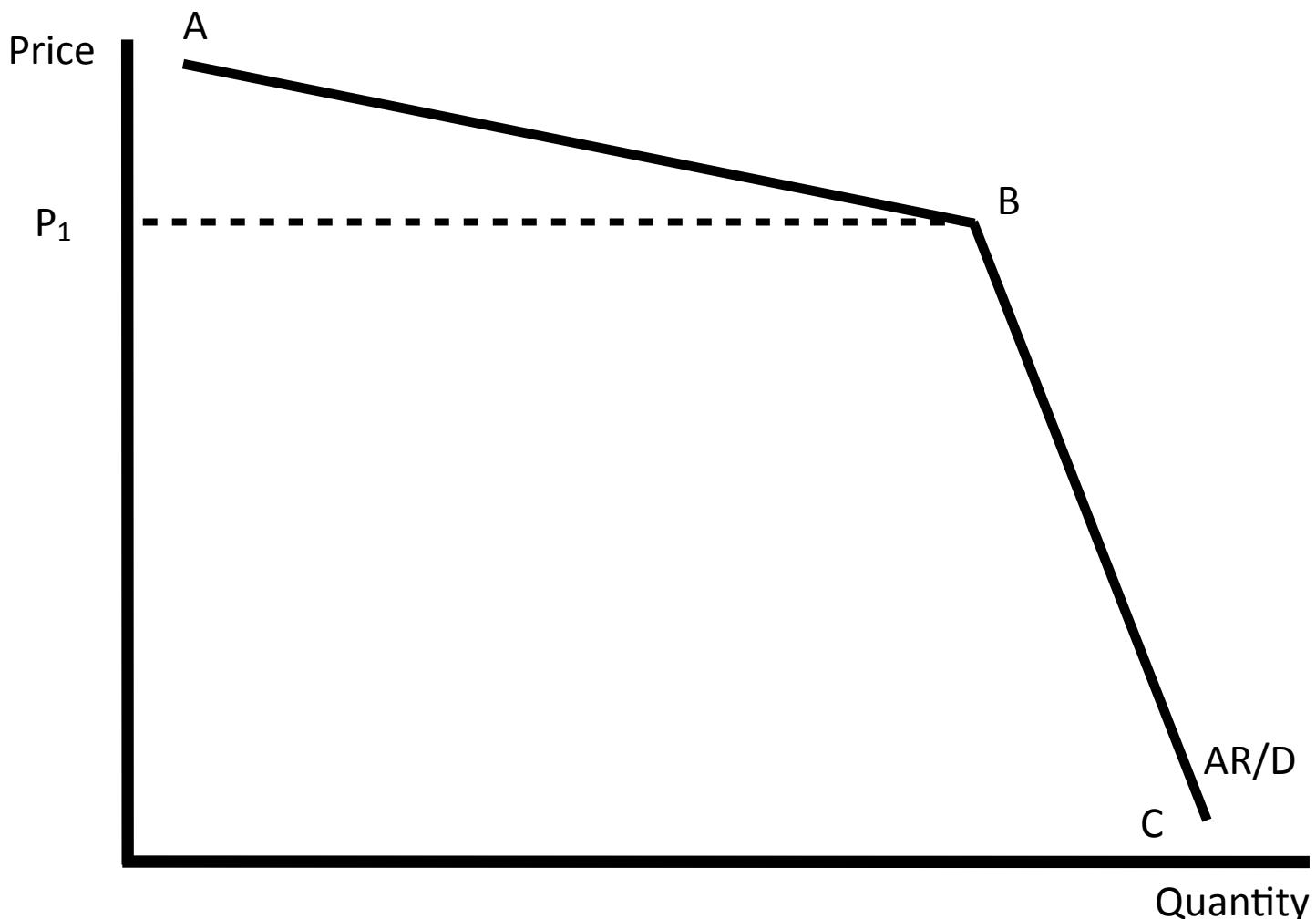
10) A rise in Marginal Costs, from  $MC_1$  to  $MC_2$ , does not change either the price charged or the quantity supplied. This is because the firm is a Profit Maximiser (for this model of Oligopoly at least) and produces where  $MC = MR$  and  $MC$  is rising. Due to the vertical segment in the  $MR$  curve (the segment from point a to point b), a rise in  $MC$  still results in quantity  $Q_{Eq}$  being supplied and price  $P_{Eq}$  being charged. See graph overleaf.

### Oligopolist Absorbing Cost Increases



- 11) From this rationale, we see that an Oligopolistic firm may absorb a rise in cost without increasing price as a result.
- 12) If a firm was to increase price due to an increase in costs, it would lose more revenue as a result of the price increase than it would from absorbing the cost. This gives rise to what is known as Price Constancy

**L.C.Q Using a Clearly Labeled Diagram, Explain the shape of the ‘kinked’ demand curve facing a firm in Oligopoly**



**Shape of the Demand Curve**

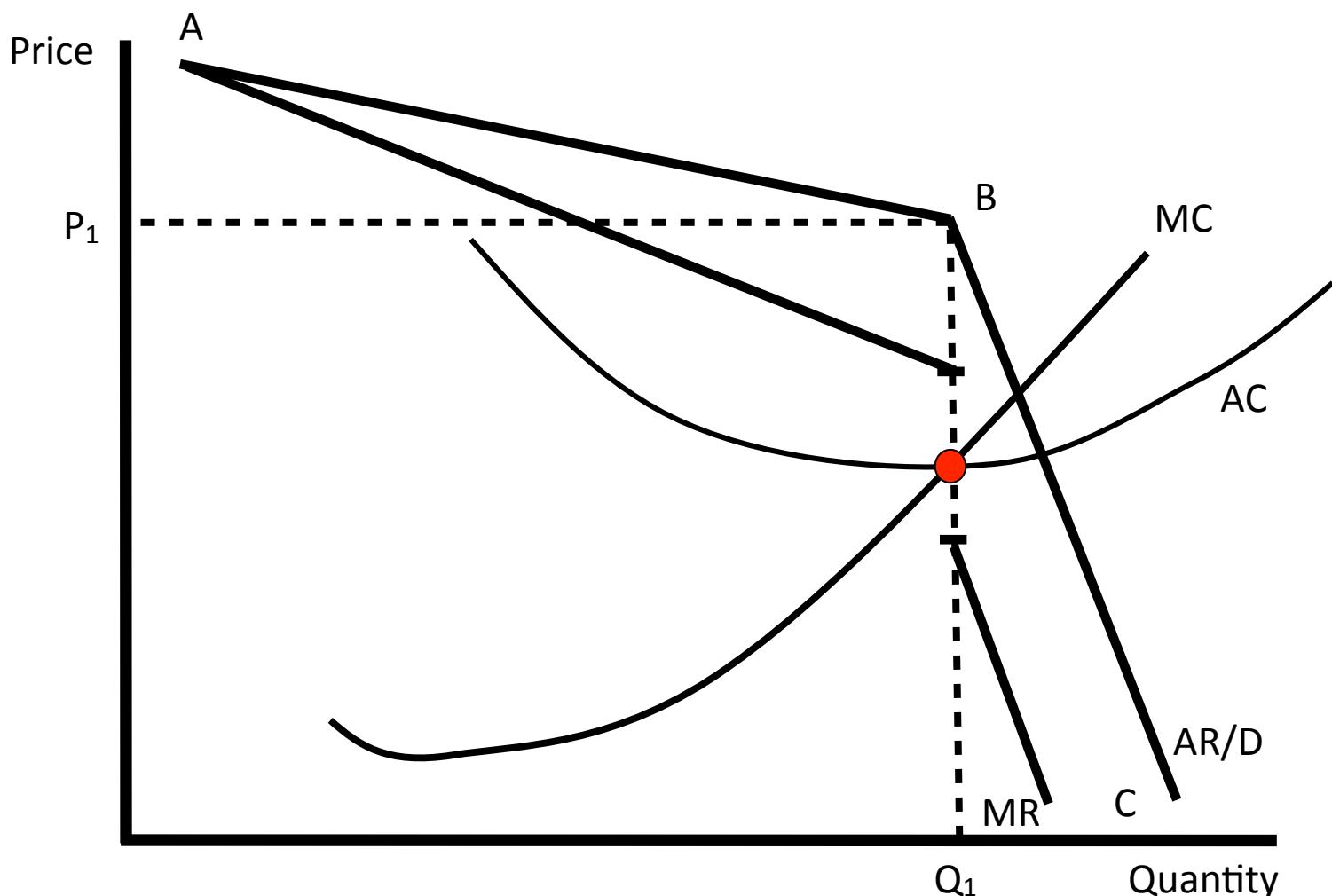
Demand curve - AB

If this firm increases its price others will leave their prices unchanged so this firm will lose many customers – this portion of the Demand Curve is elastic.

Demand curve – BC

If this firm lowers its price others will match this price decrease so this firm will gain few additional customers – this portion of the Demand Curve is inelastic.

**Using a Clearly Labelled Diagram, Explain the long run equilibrium position of an Oligopolistic firm**



**The Long Run Equilibrium Position of an Oligopolistic firm**

- 1) **Equilibrium:** Equilibrium occurs at point G where  $MC = MR$  (and  $MC$  is rising).
- 2) **Price and Quantity:** The firm will produce  $Q_1$  and sell this output at price  $P_1$ .
- 3) **Costs:** The firm's cost of production is shown at point G.
- 4) **Rise in Costs:** Should costs rise between points D and E then market price tends to remain constant at  $P_1$ .
- 5) **Profits:** This firm is earning SNPs because  $AR$  exceeds  $AC$  and barriers to entry exist.

### **Price Constancy**

Like Price Rigidity, Price Constancy involves leaving the price of the good unchanged. It differs from Price Rigidity in that the reason for not changing the price is that it may actually cost more to change the price rather than take a small dent in profits.

E.g. If the owner of a restaurant finds that his costs are rising, but only slightly, he may not increase the prices charged as this would involve reprinting all the menus and changing advertised prices. This could prove to be more expensive than his slight increase in costs and as such the owner leaves the prices unchanged.

### **Evaluation of the Sweezy Model**

- 1) The Sweezy model accurately described Oligopolistic markets in the 1930's (there was a great depression and firms had excess capacity).
- 2) However, due to the oil shocks in the 1970's and 80's, high inflation and increase in wages, Oligopolistic firms raised prices without suffering a great loss in demand.
- 3) Another problem with this model is that it does not explain how the initial equilibrium price,  $P_{Eq}$ , was set.

In industries where it is difficult for firms to raise prices without suffering a serious decline in revenue, there is an incentive to engage in collusion to which we now turn our attention.

## Forms of Collusion

**Collusion:** is any action taken by separate and rival companies to restrict competition between them with a view to increasing their total profits

In the assumptions we said that collusion may exist in an Oligopoly. We will now look at the different forms of collusion that can take place.

- 1) **Pricing Policy / Limit Pricing:** One firm, with the tacit agreement of others, could reduce prices forcing unwanted entrants out of the industry.
- 2) **Production/Output Policy:** Firms could join together to limit output to certain agreed amounts.
- 3) **Sales Territories:** Firms could divide up the markets between them and agree not to compete in each other's market segments.
- 4) **Refusal to supply firms:** Firms may not supply those firms who buy from firms not in the cartel.
- 5) **Implicit Collusion:** Each firm recognises that behaving as if they were branches of a single firm, their joint profits would be higher. So firms do not provoke their rivals by cutting prices. Instead they try to increase market share by engaging in non-price competitive measures.

Most of the forms of collusion above are known as Explicit Collusion

**Explicit Collusion:** occurs when separate companies jointly decide on a specific course of action, to reduce competition between them, with a view to increasing their total profits. I.e. there is an agreed arrangement.

However, in many Oligopolies around the world, firms may not have an explicit arrangement, but by following each other's actions, may come to an implied agreement which reduces competition and raises each of their profits. This type of collusion is known as Implicit Collusion.

**Implicit Collusion (Tacit Collusion):** occurs when there is no formal agreement between firms, but each firm acts in a non-competitive way in order to increase profits.

## Price Leadership

**Price Leadership:** occurs when the largest supplier sets its price and the smaller rivals follow its lead.

This means that the most dominant firm in the industry sets its price and, in order not to engage in Price Competition, the smaller firms in the industry set the same price for their goods without any explicit agreement.

**Price Competition:** is when firms compete with other firms on the basis of price

The idea of Price Leadership has been used in conjunction with or as an alternative to the Kinked Demand Curve. When it is used with the Kinked Demand Curve Model, it is given as the method by which the market reaches the equilibrium price. When it is used as an alternative to the Kinked Demand Curve, it is said that it is Price Leadership alone that causes Price Rigidity and not the Kinked Demand Curve.

As we said in the assumptions, firms tend not to engage in Price Competition. This is due to the fact that if one firm lowers their price, all other firms adopt the same tactic resulting in no increase in market share to any firm. Therefore, each firm is still selling the same amount of goods as they were before the price decrease, but now they are selling these goods at a lower price and as such each firm is worse off as a result. This gives rise to the fact that Oligopolistic firms engage in Non-Price Competition. We will now discuss the Pros and Cons to the consumer of Non-Price Competition.

### **Benefits to the Consumer of Non - Price Competition**

**Non-Price Competition:** occurs when firms try to increase their market share without changing their price.

- 1) **Price Stability:** Non-Price Competition results in constant prices thus making it easier for the consumer to budget for these goods.
- 2) **Better Quality Products:** As firms do not wish to compete on [rice, the only way they can compete is by the quality of their product and their after sales service. This results in a higher standard of product delivered to the consumer.
- 3) **Benefits of Advertising:** As a form of advertising, different firms sponsor sporting clubs, charities etc. When a consumer avails of these amenities, they are incurring a benefit from Non-Price Competition.
- 4) **Consumers are more Informed:** As a result of the advertising employed by each oligopolistic firm, consumers become more informed about each potential product and as such are better able to buy the good that best suits their needs.
- 5) **Consumer Loyalty is Rewarded:** A certain type of credit can accrue to the customer from constantly shopping in one business or constantly buying the same good. E.g. Club card points in Dunnes

The list above is the benefits to consumers of Non-Price Competition. However in every case, Price Competition is better for the consumer. We will now look at why consumers prefer Price Competition.

### **Reasons why Consumers Prefer Price Competition**

- 1) **Cheaper Prices:** The first and most important aspect of why consumers prefer Price Competition is that it ensures cheaper prices, resulting in an increase in consumer's real income.
- 2) **Greater Choice:** Under Price Competition, non efficient firms are forced out of the industry. As such, these people who find themselves unemployed search for a niche in the market to gain employment. When they find this niche they either set up their own firm or work in

a business that provides the consumer with different goods giving them a greater choice.

- 3) **Higher Costs in Non-Price Competition:** The “extras” that are offered to the consumer under Non-Price Competition cause a rise in the price of the good which results in a reduction in consumer’s real income.
- 4) **Unwanted Extras:** Many of the extra offers that are included with the good in Non-Price Competition are not desired by the consumer and as such are of no benefit them.
- 5) **Extras not Used:** Consumers frequently do not use the vouchers or gift tokens that they receive in Non-Price Competition and as such these “extras” are something that the consumer never receives.

Types of Non-Price Competition	
Special Offers	“X% Extra Free”
Competitions	Local and National Sponsorships
Free Gifts	Free Samples
Coupons	Loyalty Points

### **Objectives of the Firm other than Profit Maximisation**

Up to this point in our course we have assumed that the main objective of every firm is to maximise profits. In reality this is a good assumption as it accurately represents the main objective of the vast majority of firms operating in the Irish economy. However, there are reasons why firms might not wish to maximise profits and we shall now look at these reasons.

**Reasons why firms may not pursue Profit Maximisation**

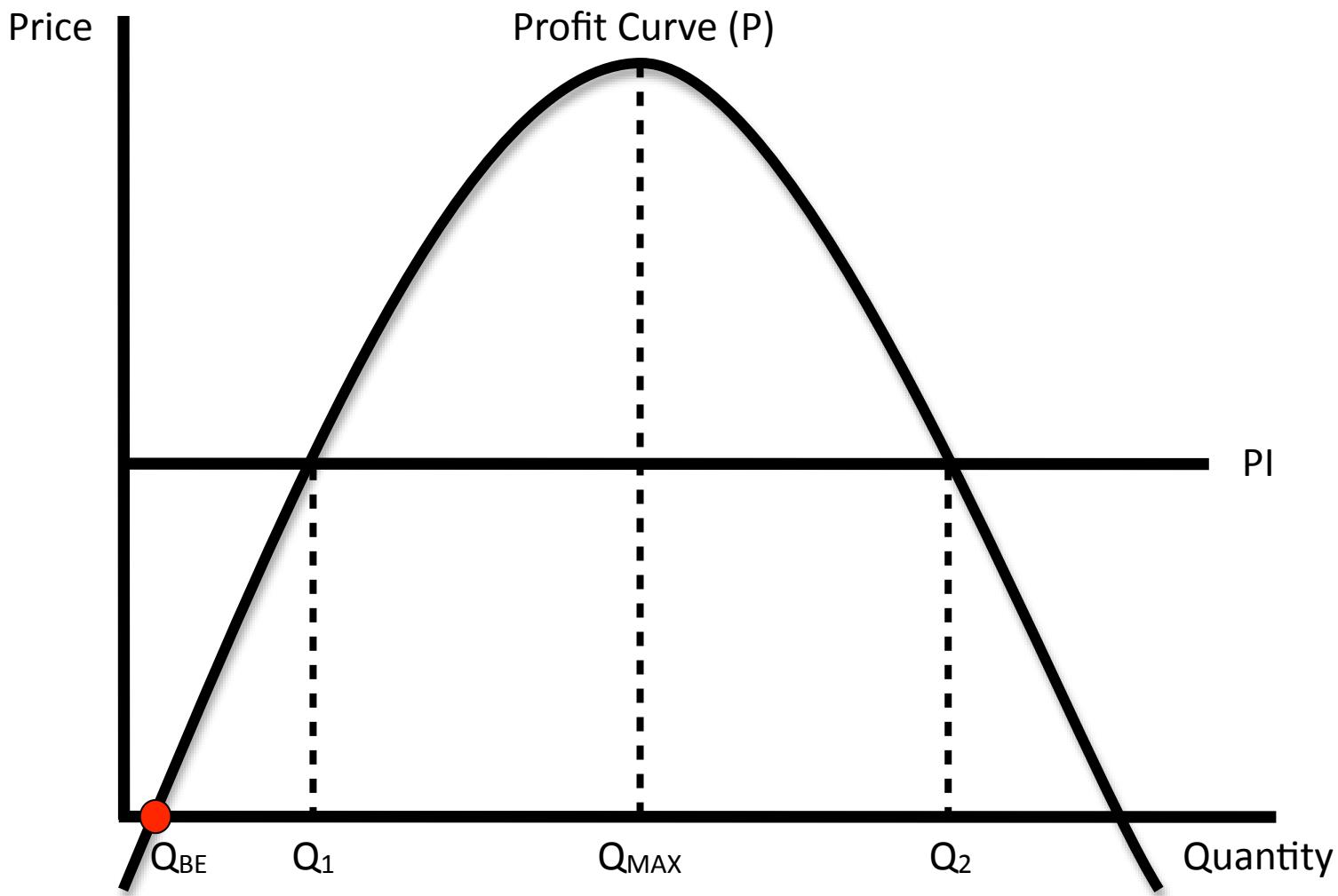
**or**

**Objectives that Oligopolistic firms may have other than Profit Maximisation**

- 1) **Fear of Government Intervention:** Firms may fear that very large Super Normal Profits (SNP) might attract government attention in the form of further regulations or increased taxes. In order to avoid this, the firms may decide to produce a certain level of output other than that level of output which maximises profits. (Where  $MC = MR$  and  $MC$  is rising).
- 2) **Fear Competition:** A firm may fear that very large Super Normal Profits (SNP) might attract new firms into the industry. To prevent this, the firm might engage in Limit Pricing, setting prices so low in order to discourage new firms from entering the industry. The firm suffers lower profits in the short run in order to gain sustained profits in the long run.
- 3) **Less Work:** The owners of the business may prefer to earn stable/moderate levels of profits rather than constantly striving for large supernormal profits as this is what they are satisfied with.
- 4) **Lack of Incentive:** Where the managers are not owners they may tend towards a more conservative approach rather than a dynamic drive to profit maximisation.
- 5) **Sales Maximisation:** Once a minimum level of profit is earned to reward shareholders, provide funds for reinvestment etc. the firm may concentrate on maximising sales; increasing its share of the market. It may wish to achieve economies of scale; decrease the level of sales of rival firms; become the most dominant firm in the market.

### The Baumol Model of Sales Maximisation

As we said in the previous section, some firms may wish to pursue policies of sales maximisation rather than profit maximisation. That is, the firm will set an initial level of profit that they wish to earn and sell as many goods as possible consistent with this level of profit. This idea was first put forward by Professor William Baumol. See graph below.



If we look at the graph above, we see that the line PI represents the initial level of profit set by the firm. The curve P represents the profit function. At low levels of output the profit function rises, showing that an increase in output results in an increase in profit. (Where  $MR > MC$ ).

The profit function/ curve, reaches its peak at quantity  $Q_{MAX}$ . This is the maximum level of profit that the firm can earn. If the firm produces one less good or one more good than this profit maximizing quantity, a fall in

profits would result. Maximum Profit occurs at the level of output where  $MC = MR$  and  $MC$  is rising.

Beyond quantity  $Q_{MAX}$ , we see that the profit function starts to fall again. Showing that an increase in output results in a decrease in profits.(Where  $MC > MR$ ).

NOTE: At very low levels of output the firm is suffering a loss. This is due to the fact that Fixed Costs are incurred even if the firm produces nothing. The firm does not break even until the quantity  $Q_{BE}$ . After quantity  $Q_{BE}$  the firm begins to earn a profit.

If we drop a perpendicular line from where the initial profit line (PI) cuts the profit curve (P); we find the two quantities that the firm could produce in order to earn the required level of profit. These two quantities occur at  $Q_1$  and  $Q_2$  respectively. If the firm is trying to maximise sales, they will produce the quantity  $Q_2$ , this is the level of output that earns the firm the greatest market share consistent with the initial level of profit.

If the firm is a profit maximiser, they will produce quantity  $Q_{MAX}$ .

If the firm wishes to just reach the initial profit level and is not concerned with profit maximisation or market share, then they will produce the quantity  $Q_1$ .