

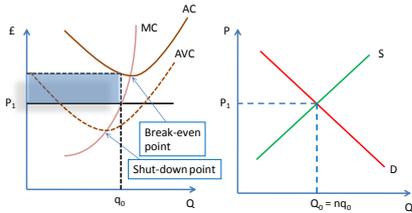
Reading map:

In your (Carlton & Perloff) text book, competition is discussed in Chapter 3, and monopoly in Chapter 4. We have discussed some of the diagrams and figures used in these chapters. For example, in Chapter 3, we discussed Figs. 3.1, 3.2, 3.3, 3.6 and 3.7, and the “theories” or arguments associated with them. (You are expected to try to understand Fig. 3.4 by yourself before the first tutorial.) Similarly, in Chapter 4, we shall discuss the material covered in pages 88-107, especially Figs. 4.2, 4.3 and 4.4, and the associated discussion. As you can see, we have not covered every page or section of Chapters 3 and 4.

<p style="text-align: center;">Economics</p> <ul style="list-style-type: none"> • What is economics? <ul style="list-style-type: none"> – Reconciliation of limited resources and unlimited wants • What is the key to this reconciliation process? <ul style="list-style-type: none"> – Efficient use of resources • How is this enshrined in economic theory? <ul style="list-style-type: none"> – The principle of minimising opportunity cost 	<p>The first important thing to understand in this slide is the concept of <u>opportunity cost</u>. It is best explained using an example. The one I used in class is as follows: I can write 1 research paper in 3 months, and it would also take me 3 months to paint a house. Hence, if I paint a house, instead of doing research, my opportunity cost would be 1 research paper.</p> <p>Next, you have to understand why efficiency requires reduction in opportunity cost. Consider someone who can paint a house in 1 month and would take 60 months to write a research paper. In that case, if he were to paint 3 houses over a 3-month period, he would be giving up $3/60$, i.e., $1/20^{\text{th}}$ of a research paper. This man, therefore, has a lower opportunity cost of painting houses ($1/20$) than me (1). He should then paint houses instead of me. How does the world benefit from this allocation of our time, which is the scarce resource in question? If this man paints houses and I write research papers then, over a 3-month period, 3 houses will be painted and 1 research paper will be written. If, on the other hand, I paint houses and this man writes research papers then, over the same 3 months, 1 house will be painted, and $1/20^{\text{th}}$ of a research paper will be written.</p>
<p style="text-align: center;">Competition - assumptions</p> <ul style="list-style-type: none"> • Homogeneous perfectly divisible output • Perfect information • No transactions cost (free entry and exit) • No externalities • Price taking 	<p>To begin with, let us define a couple of things. (a) If there is perfect information in a market, then there is no informational asymmetry of any kind. Buyers know that all sellers sell an identical product and they also know the price that each seller charges for that product. The sellers know that competing firms sell an identical product and also the prices at which they sell this product. They also know that buyers have this information. The exact definition of perfect information is a little more complex, but I am sure you get the picture. (b) Transactions costs are costs associated with entering into and enforcing contracts. If a new firm enters a market, it has to enter into contracts with suppliers, workers, creditors, distributors, etc. If it wants to leave, it has to bear the cost of renegotiating existing contracts. In the absence of transactions cost, there is no cost of entry and exit.</p> <p>Most text books itemize these bullets as the “assumptions” underlying the theory about perfect</p>

competition. Note, however, that if we make the first four assumptions, then the fifth automatically follows from them. In that sense, the fifth bullet (about price taking behaviour) is not an assumption but an inevitable outcome of the other assumptions. This is an example of critical analysis, and it would be a good idea for you to think about all theories etc in this manner.

Competition – short run equilibrium



In class, you were asked to make a leap of faith about the shape of the three cost curves; take their shapes as given. However, we discussed the shape of the demand curve, which is a horizontal straight line at price P_1 . Recapitulate that a firm in a perfectly competitive market is a price taker; it can sell as many units of the product as it can, at the price that is set by market forces, i.e., demand and supply. That is why the demand curve is horizontal, any number of units of the product can be sold at the price P_1 that is set by demand and supply (to the right of the slide).

Next, we discussed the meaning of marginal. Marginal revenue is the additional revenue earned by selling one more unit of the product. For example, if a firm sells 100 units of a product and earns £1000, and its revenue is £1060 when it sells the 101 units, then the marginal revenue of the 101st unit is £60. Marginal cost can be similarly defined. In a perfectly competitive market, a firm will earn the same amount for every additional unit of the product that it sells, in this case, P_1 . Hence, in the case of a perfectly competitive market, the demand curve is also the marginal revenue curve.

We then talked about a firm's optimal output level, i.e., the output level that is consistent with maximization of profit. Consider an output level that is less than q_0 . At all such output levels, the marginal revenue is higher than the marginal cost (the marginal revenue curve that is horizontal at price P_1 lies above the marginal cost curve MC). Hence, if a firm were to produce one more unit of the product and sell it, it would add to its profit, since the addition to revenue would be higher than the addition to cost. A profit maximizing firm should, therefore, expand output if it produces less than q_0 . By the same argument, it should reduce output if it produces more than q_0 . The output level q_0 is just right, or optimal. At that output level all profit making opportunities are exhausted. This is a general principle: a firm's profit is maximized when its marginal cost equals its marginal revenue, i.e., when the marginal cost and marginal revenue curves intersect.

At output level q_0 , the average cost per unit of the output is higher than the price at which each unit is sold; the average cost curve is higher than the horizontal line at P_1 . This means that the firm makes a loss, and the loss per unit is the difference between the average cost at

output level q_0 and P_1 . The total loss, therefore, is the area of the rectangle shaded in blue.

One last thing we noted is that the short run supply curve of the firm is the part of the marginal cost curve that lies above the shut down point. WHY? To ensure that you have the incentive to come to the lectures, and to discuss your problems with respect to BS2243 with me in person, during my office hours, I will not answer that question here. If you have not understood it, or were not in class on January 28, you have to ask me in person.

Competition – long run equilibrium

In the long run, new firms may enter the market if entry is expected to be profitable. Similarly, loss making incumbent firms can leave the market. In our case, in the short run, firms were loss making. Hence, in the long run, some firms leave the market. The overall supply declines, shifting the supply curve from S to S' (to the right of the slide). Other things (including demand) remaining the same, there is an increase in price from P_1 to P_2 . At this new price P_2 , firms break even, earning zero economic profit. In other words, in a perfectly competitive market, in the short run a firm can make a profit or a loss in equilibrium, but in the long run it always makes zero economic profit in equilibrium. Note that zero economic profit does not mean that the firm does not earn a profit. It simply means that it earns enough profit to just cover its opportunity cost.

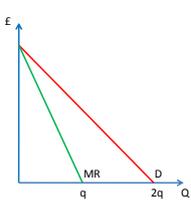
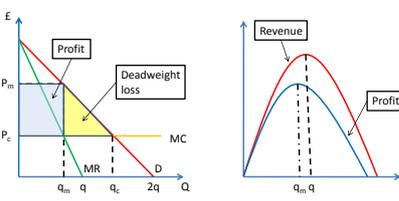
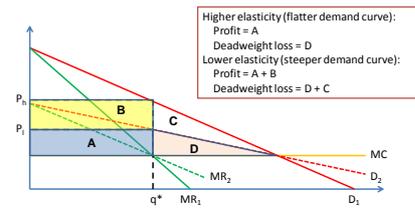
In this slide we also discussed the shape of the long run supply curve for the industry. But that is something that we will discuss further during Tutorial 1. Hence, I will not elaborate about it here.

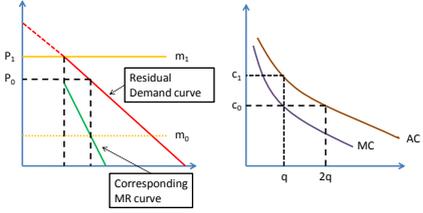
Competition – welfare analysis

Demand: $P = a - bQ$

The main message here is that if there is a deviation from perfect competition, there is a loss of welfare. We shall see another example of this during the next lecture. Hence, I shall not elaborate about it here, and will return to this again later is necessary.

But you might want to keep in mind the characterisations of the demand and the supply curve. At the level of the market, they are not merely combinations of price and quantity indicating how much buyers would buy at a given price and how much sellers would sell at that price. At the level of the market, the demand curve gives us the willingness to pay of all the buyers. Some of them need it (or value it) a lot, and hence have a high willingness to pay. Hence, if only a little is sold in the market, efficiency dictates that these people should get served first. Later, as more output becomes available for sale, those with lower willingness to pay can get served as well. Similarly, the supply curve gives us the opportunity cost of the sellers. When the price (and hence profitability) of the product is low, sellers with very low opportunity costs (i.e., those who are best at supplying

	<p>this product) will sell in the market. Others will join in as the price and profitability rises.</p>
<p style="text-align: center;">Monopoly – Demand and MR</p>  <ul style="list-style-type: none"> • Demand $P = a - bQ$ • Total revenue $TR = (a - bQ) \times Q$ $TR = aQ - bQ^2$ • Marginal revenue $MR = dTR/dQ$ $MR = a - 2bQ$ 	<p>Unlike in a perfectly competitive market, where a firm is a price taker, a monopolist has the ability to decide how much she wants to sell, or what price she wants to charge. But she cannot do both at the same time. The demand curve is downward sloping, i.e., more is bought when the price is lowered, other things remaining the same. Hence, a monopolist can either reduce price and sell more, or keep the price high and sell less.</p> <p>Suppose that a monopolist wants to sell more. She would then have to reduce the price of the product. But the lower price would not only have to be charged for the additional units of the product that she sells, it would have to be charged for <i>all</i> units of the output that are sold. It can be demonstrated that in that case the marginal revenue is lower than the price, i.e., the marginal revenue curve lies below the demand curve in a monopolistic (and all imperfectly competitive) market(s).</p> <p>Specifically, if the demand curve is linear, the marginal revenue curve has the same intercept and double the slope. This is the easy way to derive the equation for a marginal revenue curve from the equation of a linear demand curve. This principle will be used later in the module.</p>
<p style="text-align: center;">Monopoly – TR and profit</p> 	<p>We discussed the diagram on the right in the tutorial. Hence, here we shall focus on the diagram on the left. The monopolist's profit maximising output is q_m, the output level for which its marginal cost equals its marginal revenue. This output level is lower than the profit maximising output in a perfectly competitive market (q_c). Between q_m and q_c, the demand curve lies above the marginal cost curve, i.e., there are buyers who are willing to pay prices that are higher than the seller's marginal cost, and yet they do not get served. This gives rise to deadweight loss, which is the yellow triangle. The blue rectangle next to it is the monopolist's profit, and the beige triangle on top is the consumer surplus in the monopolistic market.</p>
<p style="text-align: center;">Demand elasticity & deadweight loss</p>  <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>Higher elasticity (flatter demand curve): Profit = A Deadweight loss = D</p> <p>Lower elasticity (steeper demand curve): Profit = A + B Deadweight loss = D + C</p> </div>	<p>The deadweight loss, which is a measure of welfare loss, provides a rationale for government intervention whenever there is a deviation from a competitive market. But when is government intervention more desirable? Consider two demand curves: the flatter curve represents higher price elasticity of demand while the steeper curve represents lower price elasticity. (WHY IS THAT THE CASE? I explained it in class. If you missed the class, you would have to drop into my office and ask me.) You know by now that the triangle D is the deadweight loss associated with the flatter curve while the sum of the two triangles C and D is the deadweight loss associated with</p>

	<p>the steeper curve. In other words, deadweight loss is higher in a market with inelastic demand, and hence government intervention is easier to justify in such markets.</p>
<p>Firm characteristics favouring monopoly</p> <ul style="list-style-type: none"> • Knowledge advantage • Natural monopoly 	<p>What gives firms monopoly power? First consider the diagram on the right. If the initial (fixed or sunk) cost of setting up a production unit is high but the marginal cost of increasing output decreases sharply thereafter, a firm is said to enjoy natural monopoly. Most utilities firms enjoy some degree of natural monopoly. In these cases, the average cost declines as output increases, and hence it is very difficult for new firms to challenge the incumbent firms. Since entry (or the threat of entry) of new firms is a key characteristic of a competitive market, it is easy to see why, in its absence, monopoly power is preserved.</p> <p>Now consider the diagram on the left. In a perfectly competitive market, all firms initially have marginal cost m_1. An innovative firm reduces its marginal cost to m_0. The aggregate supply curve of the other (identical) firms is horizontal at P_1, and this supply curve intersects the demand curve to generate the competitive market equilibrium. The firms with marginal cost m_1 will not sell any more units of the output. But the innovative firm, with the lower marginal cost, can sell the product at a reduced price, and hence it is the de facto monopolist for all output levels beyond the competitive equilibrium. Its profit maximising output is determined by equating marginal cost with marginal revenue, and it charges a price P_0 that is lower than P_1.</p>
<p>Digression – Corruption</p> <ul style="list-style-type: none"> • Grand vs. petty • Cost vs. uncertainty • Inhibiting vs. facilitating 	<p>Using this slide, I just wanted to make the point that there is no easy way to promote a competitive market. For example, it can be argued that elimination of corruption may facilitate market entry and thereby encourage competition. However, as we discussed, corruption has many different dimensions, and it is not obvious as to which aspects of it government policy should target for elimination, or even whether corruption should be eliminated at all.</p>
<p>Government policy</p> <ul style="list-style-type: none"> • Bureaucratic discretion <ul style="list-style-type: none"> – Entry restrictions like licences – Exit – bankruptcy procedures • Creditor/investor protection • Contract enforcement 	<p>These are all policies that facilitate market entry by new firms, which is the single most important factor in determining a market's competitiveness.</p>

Firm strategy

- Innovation
 - Knowledge advantage
 - Cost advantage
- Mergers and acquisitions
 - Market power
 - Economies of scale and scope
- Lobbying
 - Incumbents vs. potential entrants

These are strategies that a firm can adopt to retain market power, i.e., prevent perfect competition from setting in.