

Lecture 1: Introduction

The firm and its costs

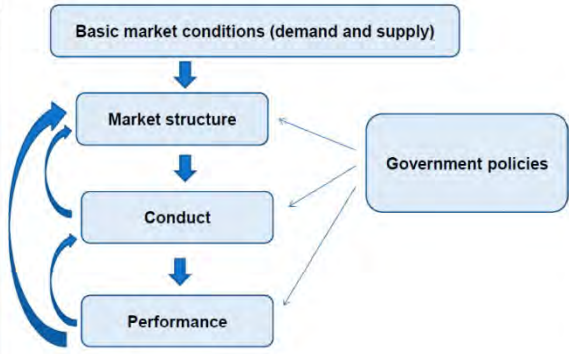
- The neoclassical firm
- Short run costs and long run costs
- Economies of scale and economies of scope

Competition and monopoly

- The economies of perfect competition
- The economies of monopoly
- Welfare comparison

What is industrial economics?	The branch of economics which analyses business strategies in markets that are less than perfectly competitive and subject to economies of scale, and to develop appropriate policy responses.
What is competition?	Competition arises when firms fight for customers by offering them a better deal in terms of price, quality, range, reliability and associated services and customers also do not have the ability to dictate price on the firms. It is messy... <ul style="list-style-type: none">• High short run profits• Painful exit
The benefits of competition	<ul style="list-style-type: none">• Low prices, close to cost• Low costs as firms fight for market share and survival• 'Invisible hand' (Adam Smith, 1776)<ul style="list-style-type: none">◦ Perfect competition is pareto efficient◦ Enables high social welfare◦ If no externalities, public goods, asymmetric information , etc.
But how free should markets be?	Some markets cannot support competition <ul style="list-style-type: none">• Natural monopolies e.g. water – need for price regulation Strong incentives for firms to suppress competition <ul style="list-style-type: none">• Cartels• Foreclosing (excluding) rivals – need to understand business strategies• Then design appropriate competition policy
Measuring market structure	<ul style="list-style-type: none">• Industrial concentration combines<ul style="list-style-type: none">◦ Number of firms (N)◦ Relative market shares (dominance)• 1/N index: 1 divided by the number of firms• k – concentration ratio<ul style="list-style-type: none">◦ C_k = share of k largest firms• Herfindahl-Hirschman Index (HHI)• HHI = sum of squared market shares of all firms<ul style="list-style-type: none">◦ 'typical' (weighted average) market share◦ The range lies between 0 and 1
What results in more competition?	<ul style="list-style-type: none">• More rivals/lower concentration• Behavioural change from collusion to unilateral strategies• Greater ease/threat of entry• More substitutable products• More powerful incentives for managers to compete for customers
How do firms compete?	Perfect competition is an equilibrium concept <ul style="list-style-type: none">• Buyer or seller cannot affect price individually• No clever strategy: adjust q until $P=MC$• Hayek: competition is a discovery process about what people want and how to provide it Real competition involves firms choosing their own strategies to fight for

	each other's customers. What strategies? <ul style="list-style-type: none"> • Pricing • Products • Investment
Pricing strategies	Restricting output (monopolist or large share) Price discrimination Non-linear pricing (quality discounts) Predatory pricing Cartels Tacit collusion
Product strategies	<ul style="list-style-type: none"> • Horizontal differentiation (characteristics) • Vertical differentiation (quality) • Range (portfolio) • Bundling • Information/misinformation (e.g. advertising) • Quality (product research and development)
Investment strategies	<ul style="list-style-type: none"> • Capacity • Technology (process research and development) • Vertical integration • Mergers
How are these strategies chosen?	<ul style="list-style-type: none"> • Profit maximisation: optimisation • Selection: survival of the fittest • This is market driven • The cooperative strategies are often illegal
Measuring the effectiveness of competition (performance)	<ul style="list-style-type: none"> • Allocative efficiency <ul style="list-style-type: none"> ◦ Price-cost margins and profitability ◦ But need to cover overheads and reward efficiency • Technical efficiency <ul style="list-style-type: none"> ◦ Costs and productivity • Dynamic efficiency <ul style="list-style-type: none"> ◦ Growth and new products • What about employment? <ul style="list-style-type: none"> ◦ Flexible labour markets and real wages
Methodology	<ul style="list-style-type: none"> • Structure-conduct performance <ul style="list-style-type: none"> ◦ Key indicators of weak/strong competition ◦ Performance depends on conduct of firms, conduct depends on structure of industry • Game theory <ul style="list-style-type: none"> ◦ Subtle understanding of strategic behaviour • Econometrics <ul style="list-style-type: none"> ◦ Data on how customers: respond to prices; switch suppliers ◦ Data linking prices/productivity etc to competition • Case studies

The SCP approach	 <pre> graph TD A[Basic market conditions (demand and supply)] --> B[Market structure] B --> C[Conduct] C --> D[Performance] E[Government policies] --> B E --> C E --> D D --> B D --> C </pre>
Definition of the firm	<p>Firms are single entities represented by production functions which aim to maximise profits. In the traditional neoclassical model, firms are single entities represented by production functions which aim to maximise profits.</p> <p>Real world firms are much more complex: not individual decision-makers; operate many different products and geographical markets. Example: Nestle.</p>
The neoclassical firm	<p>Firms may pursue objectives other than pure profit maximisation.</p> <p>Separation of ownership and control in large corporations</p> <ul style="list-style-type: none"> ○ Satisficing rather than profit-maximising <p>Reliance on rule of thumb pricing strategies – target rate of return, fixed mark up over invoice costs</p> <p>Real world firms are more complex than the neo classical firm</p> <p>Constraints and incentives ensure managers do not deviate too far from this goal.</p> <ul style="list-style-type: none"> • Threat of takeovers, stockholder revolt • Executive compensation
Short run costs	<ul style="list-style-type: none"> • Total cost = fixed costs + variable costs • Sunk cost: the proportion of fixed costs that cannot be recovered, and therefore should not affect the firm's subsequent decisions • Sunk cost = fixed cost – recoverable cost • Average cost: cost per unit of output • Average (total) cost = average variable cost + average fixed cost • Marginal cost: the cost from producing one additional unit of output <p>The gap between the ATC (SRAC) and AVC curves becomes smaller as output increases, because AFC fall as output rise.</p> <p>In general, in the short run, MC and AVC will fall initially as the firm benefits from specialisation, but eventually, constraint of the fixed factors of production will bind and these costs will increase.</p>
Short run and long run costs	<p>In the short run, some inputs are fixed.</p> <ul style="list-style-type: none"> • Total costs will involve both a fixed cost component and a variable cost component • Focus on variable cost and recoverable cost <p>In the long run, all inputs are variable.</p> <ul style="list-style-type: none"> • Focus on total cost
Long run costs: economies of scale	<p>The shape of the long-run average cost curve is determined by the returns to scale implied by the production function</p> <ol style="list-style-type: none"> 1. Constant returned to scale: proportionate increase in all inputs causes output to increase by the same proportion 2. Increasing returns to scale: proportionate increase in all inputs results in a more than proportionate increase in output

	<p>3. Decreasing returns to scale: proportionate increase in all inputs results in a less than proportionate increase in output.</p> <p>Sources of economies of scale:</p> <ul style="list-style-type: none"> • Specialisation (machinery and labour) • Increases in the size of processing units • Access to national capital or advertising markets <p>Sources of diseconomies of scale:</p> <ul style="list-style-type: none"> • Some inputs are actually fixed (scarce) even in the long run – managerial ability • Transportation costs – cement, sand and steel
Long run costs: economies of scope	<p>In some cases, it may be less costly for a single firm to produce several products than for the same production to occur in various single-product firms – firms may benefit from economies of scope. Sources of economies of scope:</p> <ul style="list-style-type: none"> • Fixed factors of production • Sharing inputs – research knowledge <p>Example: institutions of higher education</p>
The economics of perfect competition	<p>Perfect competition is characterised by:</p> <ol style="list-style-type: none"> 1. Large number of buyers and sellers 2. Homogenous products 3. Perfect information 4. No transaction costs 5. Free entry and exit <p>Firms and consumers are price takers – the demand curve facing each individual firm is perfectly elastic. For a perfectly competitive firm:</p> $\text{Marginal Revenue (MR)} = \text{Market Price (P}_m\text{)}$
The economics of monopoly	<p>A monopoly is the sole producer of a good or service for which there are no close substitutes, so the monopolist's demand curve is the market demand curve. For a monopolistic firm:</p> $\text{Marginal Revenue (MR)} = \text{Marginal Cost (MC)}$ <p>For a monopoly, marginal revenue is always less than price.</p> $\text{MR} = p (1 - 1/e_D)$ <p>Any firm that can set price above marginal cost has some degree of market power or monopoly power.</p> $\text{Lerner index} = (p - mc)/p = 1/e_D$ <p>The monopolist's control over price depends on the elasticity of demand.</p> <ul style="list-style-type: none"> • If e_D is high, the monopolist's mark-up will be lower • If e_D is low, the monopolists mark up will be high
Competition and monopoly: welfare comparison	<p>Consumer surplus: difference between the maximum amount consumers are willing to pay for a good and the amount they actually pay.</p> <p>Producer surplus: the difference the market price the producer receives for selling a unit of output and its reservation supply price.</p> <p>Monopoly is always allocatively inefficient.</p> <p>Empirical estimates of the size of the deadweight loss due to monopoly power range from 0.1% to 7% of GNP for the US.</p> <p>True costs of monopoly likely to be greater due to rent-seeking behaviour.</p> <ul style="list-style-type: none"> • Monopolists may spend more on advertising, product differentiation, and lobbying and campaign contributions to maintain market power. • In less competitive markets there is less pressure on firms to use inputs efficiently <p>But possible benefits of market power</p> <p>Economies of scale</p> <p>Fostering technological change and innovation</p>

Chapter 1: Introduction P3 - 11**1.6 Summary Points**

1. The field of industrial organisation developed as an offshoot of microeconomic theory.
2. Industrial organisation emphasizes the behaviour of firms as compared with the behaviour of industries more than does traditional microeconomic theory.
3. The two traditional approaches to the study of industrial organisation are the structure-conduct-performance approach and the Chicago School Approach. The structure-conduct-performance approach originally was primarily empirical in its orientation, whereas the Chicago School Approach emphasised the use of price theory.
4. Modern industrial organisation emphasizes the use of game theory to explore oligopoly behaviour
5. Industrial organisation economists place great emphasis on dynamic efficiency, or the optimal rate of technological advance
6. The antitrust laws developed in response to the industrial revolution, which results in significant economies of scale and greatly increased the size of the geographic market for many products. The laws were also spurred by the development of modern capital markets that enabled firms to raise large amounts of capital in the equity market and the liberalization of the laws of incorporation in many states.
7. The Sherman Act was signed into law in 1890. Congress has passed additional antitrust laws as policy has evolved.

Chapter 2: The Firm and its Costs P13-43

2.1	The Neoclassical Firm	<ul style="list-style-type: none">• The traditional neoclassical firm is represented by a production function that summarises the relationship between inputs and outputs given the current technology.• Regardless of industry structure, each firm is assumed to maximise profits, making it possible to precisely predict its output and pricing decisions.• Firms today often operate in many different product and geographical markets and are characterised by many operating divisions and levels.• Some critics of profit maximisation have focused on the role of corporate managers in daily business decisions, asking what motivates these managers.• Other critics have pointed out the implications of large size and structural complexity for the realism of the assumption of profit maximisation.
2.2	The Theory of the Firm	<p>2.2.1 Advantages of the Market</p> <p>Williamson points out three production cost advantages of using the market:</p> <ol style="list-style-type: none">1. Suppose production of some input is subject to substantial economies of scale, yet suppose also that an individual firm requires only a relatively small quantity of input. By aggregating the demands of many such small firms for that input, a single producer can realise economies of scale and producer a lower average cost2. Realisation of economies of scope not available to a single firm3. A third production cost advantage is reduction of risk. If there uncertainties in demand for a single firm's product, a market can reduce risk by pooling demands over many firms
2.7	Summary Points	<ol style="list-style-type: none">1. Many modern firms bear little resemblance to the traditional firm of microeconomic theory. They are large, complex entities that often operate in many different product and geographical markets.2. The modern theory of the firm build on Ronald Coase's fundamental observations that the firm and the market are alternative ways of organizing production and that costs are associated with either way of organizing production.3. Advantages of using the market include the ability to aggregate demands of many small firms, allowing a producer to realize economies of scale or economies of scope. In addition, using the market can reduce production costs by reducing risk.4. When transaction costs are high, firms are likely to rely on internal production rather than using the market. Three dimensions of transactions are important in identifying circumstances when transaction costs are likely to be high: their frequency, the amount of uncertainty associated with them, and the degree of asset specificity5. In firms that are organized as sole proprietorships or partnerships, ownership and control of the firm are combined in the hands of one or a few people. In a corporation however, ownership and control are typically separated.6. The separation of ownership and control in corporations gives managers the freedom to pursue objectives other than profit maximisation. Possible managerial goals include sales

		<p>maximisation, pursuit of high growth rate, utility maximisation, and a focus on job security</p> <ol style="list-style-type: none"> 7. Some economists argue that size and complexity of modern firms make it hard for managers to choose the profit maximising strategy. They hypothesize that managers opt for satisficing behaviour rather than profit maximising behaviour. Managers who adopt satisficing behaviour may use a variety of rules of thumb to make their day to day business decisions 8. Defenders of the assumption of profit maximisation argue that managers are both constrained and encouraged to maximise profits. Among the constraints are the possibility of stockholder revolt, the threat of takeover, and competitive pressure from the product market. Incentives such as bonuses and stock options encourage managers to pay attention to profits. 9. Any profit maximising firm, regardless of industry structure, will choose the quantity of output for which marginal revenue equals marginal cost. Average costs are important for firms decisions about whether to continue production or remain in the industry. 10. It is important to distinguish between accounting costs and economic costs. Although accounting costs are reported by firms in their financial reports, economic costs are the relevant costs for a firms decisions 11. A firms cost curves differ depending on the time period under consideration. In the short run, at least one of the firms inputs is held constant; total short-run cost can thus be divided into fixed and variable costs. Fixed costs which cannot be recovered once they have been paid are sunk costs 12. In the long run, all inputs are variable and the firm can choose whatever combination of inputs allows it to produce a given level of output at the lowest possible cost. The shape of a firms LRAC curve depends on the returns to scale. Increasing returns to scale, or economies of scale, imply a negatively sloped LRAC, whereas a positively sloped LRAC corresponds to decreasing returns to scale. 13. Economies of scale can exist at the product, plant and multi-plant levels. Sources of economies of scale include specialization, increases in the size of processing units, economies of massed reserves, spreading of overhead, and access to national capital or advertising markets. 14. Cost concepts have to be modified for firms that produce more than one product. A key concept for a multiproduct firm is economies of scope, the cost savings that result from producing multiple products. Economies of scope can arise from the use of fixed factors of production or from the sharing of an input; when economies of scope exist, firms have a strong incentive to realise the cost savings by producing more than one product.
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Chapter 3: Competition and Monopoly P49-70

3.6 Summary Points

1. The perfectly competitive model serves as an important reference point for examining other industry structures, and the monopoly model shows how a firm with market power chooses its price and quantity
2. Because of the characteristics of a perfectly competitive market, each firm takes price as given by the market equilibrium of demand and supply. The firm thus faces a horizontal demand curve for its own output, making the demand curve and the marginal revenue curve the same
3. In the short run, a perfectly competitive firm will produce the output for which price equals (short run) marginal cost as long as that price is greater than the average avoidable cost. If all fixed costs are sunk, average avoidable cost is identical to average variable cost.
4. In the long run, profit maximising perfectly competitive firms choose the output level at which price equals long run marginal costs
5. Market equilibrium is the intersection of the market demand and market supply curves. In the short run a perfectly competitive firm may be making positive, negative, or zero economic profits. In the long run, equilibrium price must equal average cost so economic profits are zero.
6. Economists often evaluate the welfare effects of changes in a market structure or of government policies by looking at changes in consumer and producer surplus. Consumer surplus measures the difference between the maximum amount consumers are willing to pay for a good and the amount they actually pay. Producer surplus is the difference between the market price the producer receives and the lowest price for which the firm would be willing to produce a given level of output.
7. The competitive market equilibrium is allocative efficient: it maximises the sum of producer and consumer surplus.
8. A monopoly is the only producer of a product that has no close substitute. Because the monopoly faces the downward sloping market demand curve, marginal revenue is less than price. If the market demand curve is linear, the monopolists marginal revenue curve has the same vertical intercept as the demand curve but is twice as steeply sloped
9. Because of the difference between price and marginal revenue, price is greater than marginal cost at the monopolists profit maximising level of output
10. A monopolist's ability to charge a price that's above marginal cost depends on the elasticity of demand. The less elastic demand, the greater the market power the monopoly has.
11. The deadweight loss triangle is a measure of misallocation of resources resulting from monopoly. Many economists have estimated the size of the deadweight loss. Their estimates range from as low as 0.1% of GNP to 13%
12. The simple comparison of competition and monopoly highlights the resource misallocation associated with market power. However, policy makers need to keep a few cautions in mind. In particular, significant economies of scale or dynamic considerations concerning technological change may warrant a more lenient attitude toward monopoly power than the simple model suggests