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Chapter 1

Lecture Notes

1.1 Thinking Like an Economist

1.1.1 What is Economics?

> **Life** is about making choices.
> Economics is the **science of** choice.
> That means economics is the **science of life.**

by Mr. Alan Duhs (Senior Lecturer, UQ School of Economics

What is Microeconomics?

- How to use what you have (your resources) to get as much as possible of what you want
- It's mostly about how individuals make the most efficient (effective) choices
- The systematic effects these choices have on other individuals

Note 1: Scarcity Principle

Our resources are limited, so getting more of one thing means getting less of another.

- Wants exceeds available resources
- Choices between alternatives needed

Something is **scarce** if you:

- have to sacrifice something else to get it (e.g. money, time, effort)
- need to pay a price for it (i.e. not free)

Consumers will be forced to decide what to consume

Producers will be forced to decide what to produce

Governments will be forced to decide how to allocate resources to achieve specified objectives

1.1.2 Opportunity Cost

All about what was **not** chosen. Economic concept to help make a rational choice. What was sacrificed. What is given up once a decision has been made.

1.1.3 Cost Benefit Principle

Chose to do something only if the **extra benefit** (incremental benefit) from doing it is greater than (or equal to) the **extra cost** (incremental cost), assuming the individual is **rational**.

1.1.4 Economic Surplus

Incremental benefits of an action minus the incremental explicit and implicit costs of that action

Explicit cost a cost that involves spending money (i.e. a transaction physically occurs)

Implicit cost a non-monetary **"opportunity cost"** (no transaction occurs but an alternative is not chosen)

Econmic decision strive to maximize economic surplus by:

1. **maximizing** the benefits
2. **minimizing** the costs

Economic surplus can be maximized by making choices that **minimize the opportunity cost**. **Opportunity cost** is economics is about assessing if an **efficient choice** of resources has been made.

1.1.5 Rules for Making Rational Economic Choices

In economics, a rational choice should:

1. **include** opportunity cost
2. **exclude** sunk cost
3. measure cost in **absolute dollar amount**, not percentages
4. be based on **Marginal Analysis**

Note 2: Sunk Cost

- expenses that have occurred in the past before a decision has been taken
- costs that would have had to occur in order for a choice to be made
- costs that are typically not able to be directly recovered
  1. exploration costs (oil well, mining)
  2. market research costs (focus groups, surveys)
  3. feasibility study costs (before a decision is made)

1.1.6 Marginal Benefit

The change in total benefit from doing **one extra unit of** an activity

$$= \frac{\text{change in total benefit}}{\text{one extra unit sold}}$$

1.1.7 Marginal Cost

The change in total cost from doing **one extra unit of** an activity

$$= \frac{\text{change in total cost}}{\text{one extra unit produced}}$$

Note 3: Economic Efficiency

1.1.8 Absolute and Comparative Advantage

Absolute Advantage

- ability of an individual, firm, or country **to produce more** of a product or service than competitors using the **same amount** of resources.
- alternatively, produce the **same** amount of product or services as competitors with *less resources*.

Comparative Advantage

- ability of an individual, firm, or country to produce a product or service at a *lower opportunity cost* than other competitors (relates to who is more efficient at producing something).

Opportunity cost is about assessing if an **efficient choice** of resources has been made. Outcomes are efficient if opportunity cost is minimised. **Comparative advantage** exists with the producer (or service provider) producing the product at the **lowest opportunity cost**. Contrast **absolute advantage** which is *irrelevant* in deciding who is more efficient at producing something.

1.1.9 Gains and Specialization

Note 4: Principle of Comparative Advantage

- Everyone does best (individuals or countries) when they concentrate on activities for which their opportunity cost is lowest.
- By exchanging goods with others, individuals can more efficiently obtained their preferred mix of goods and services.

1.1.10 Production Possibility Curve (PPC)

- The production possibilities curve (PPC) = a graphical representation describing the maximum amount of one good that can be produced for every possible level of production of another good.
- **Assumptions:**
  1. only two goods are able to be produced (for simplification), bananas and blueberries
  2. consider the PPC for a single worker only

Attainable Point: Any combination of goods that can be produced using currently available resources. All points on the PPC, as well as below and to the left of the PPC, are attainable.

Unattainable Point: Any combination of goods that cannot be produced using currently available resources. All points lying above and to the right of the PPC are unattainable.

Efficient Point: Any combination of goods for which currently available resources **do not** allow an increase in the production of one good unless there is a reduction in the production of the other.

Inefficient Point: Any combination of goods for which currently available resources **enable** an

increase in the production of one good **without** a reduction in the production of the other.

1.2 Demand and Supply

1.2.1 Demand

Demand: Not stuff, stuff at a price

1.2.2 Market System

Individual preferences and purchasing power + costs of production → generate prices → act as signals that coordinate decision making → guide resource allocation in the economy
Decentralized market economies often outperform centrally planned economies in terms of efficiently allocating resources → But, not always → sometimes they fail

Note 5: Demand Definition

Demand is a mathematical relationship between cost and quantity demand (stuff)

- **Demand** is a **relationship** between prices and the quantities demanded at those prices, sometimes referred to as a "willingness to pay curve"
- **Demand** is a downward sloping relationship
- As price increases, the **quantity demanded** by consumers decreases
- The area under the demand curve is the amount of money a consumer spends
- The **"Ceteris paribus"** assumption in Latin meaning "all else being equal"
  - needed to develop the demand model
  - when analyzing two variables (such as price and quantity), it is assumed **all other variables are held constant** (not able to be changed).

1.2.3 Supply

As the price a product (or service) **increases**, and assuming *ceteris parabis*, producers will supply **more**. **Note:** there is an upward sloping (positive) relationship between price and quantity supplied. A change in price results in a movement **along** the supply curve.

Note 6: Supply Definition

Supply in economics is represented as a relationship between **price** and **quantity supplied**.

Market Supply

All individual producers' quantities supplied add to create a market supply for a product (or service).

1.2.4 Interaction of Supply and Demand

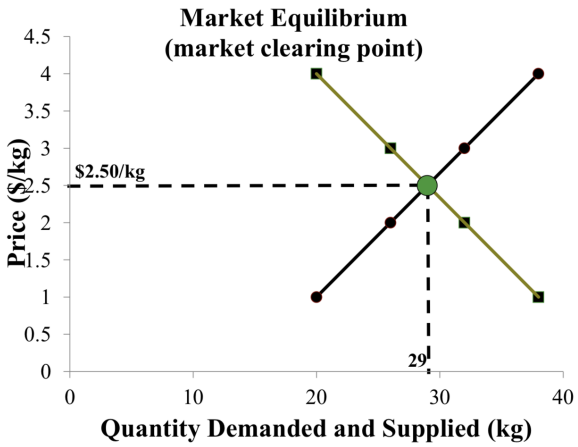

Figure 1.1: Market Equilibrium

- The intersection of the supply and demand curves so → quantity supplied = quantity demanded AND selling price = purchase price
- A point where suppliers are happy to sell a given quantity at a certain price, and this exactly matches the price consumers are willing to pay for this quantity supplied

1.2.5 Market Clearing Point

Competitive Market

- has many buyers and many sellers
- Prices and quantities continue to adjust until a market clearning point is reached, eliminating shortages and surpluses
- note the market clearing point and the **model suggests** equilibrium is a **static point**. In reality, it can continually move. i.e. the point is **dynamic**

Price Floor: Price can be set higher than market clearing

Price Ceiling: Price can be set lower than market clearing

Price Floor

- used by governments to set a legally determined price to protect suppliers
- the price is set **above** the market clearing price, and becomes a minimum price for suppliers
- this minimum price is then guaranteed by the government

Price Ceiling

- used by governments to set a legally determined price to protect consumers (e.g. tenants who rent, petrol "price caps" when oil prices rising fast)
- the price is set **below** the market clearning price, to help protect consumers from higher prices
- the legal price is a maximum that can be charged by suppliers
- What about **illegally** paying higher prices for the quantity that **is** available? **Black Markets**?

Market Failure: an inefficient allocation of goods and services in a market

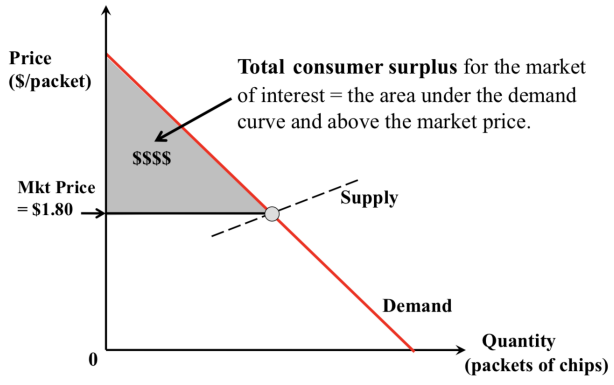

Figure 1.2: Total Consumer Surplus

Note 7: Consumer Surplus

The maximum price an individual consumer is prepared to pay less the clearing price set by the market = an individual's consumer surplus.
See Figure 1.2

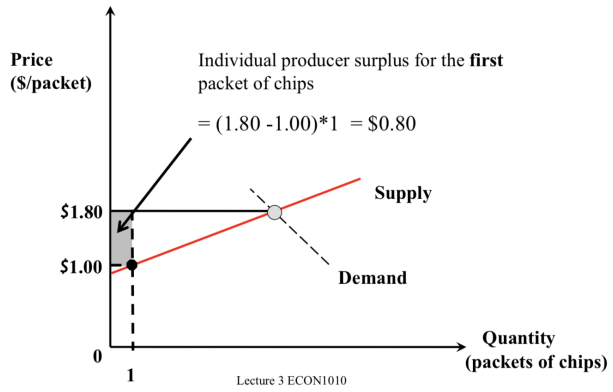

Figure 1.3: Individual Producer Surplus

Note 8: Producer Surplus

The market clearing price less the minimum price a supplier would have been willing to accept in a sale
See Figure 1.3

Note 9: Economic Surplus

Total Economic Surplus = total consumer surplus + total producer surplus (maximised in competitive markets)

Dead Weight Loss

Economic inefficiency from government intervention. It's the area between the lines that is loss by introducing a Price Floor

Note 10: Increase in Demand

Increase in demand → **Right shift** in demand → **Positive movement** in demand
Figure 2.1 shows the curve shifting.

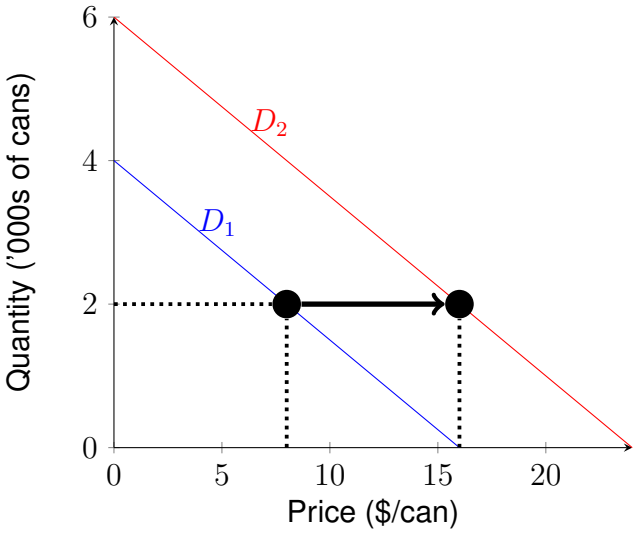

Figure 1.4: Right Shift in demand

Note 11: Decrease in Demand

Decrease in demand → **Left shift** in demand → **Negative movement** in demand
Figure 1.4 shows the curve shifting.

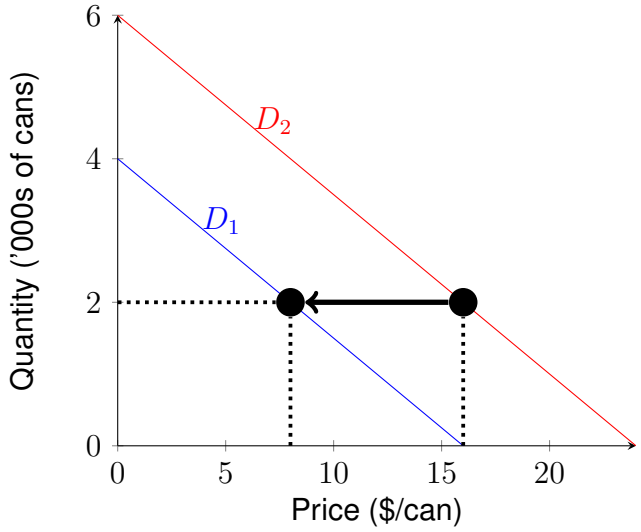

Figure 1.5: Left Shift in demand

1.3 Factor Causing a Shift in Demand

- Change in consumer taste (or preference)
- Change in population
- Change in expectations of future price rises
- Change price of a substitute
- Change in price of a complement
- Change in income (and the product is normal)
- Change in income (and the product is inferior)

Requires the assumption that **price remains fixed** and some other factor changes so as to affect the quantity demanded by the consumer

Note 12: Substitutes

A product or service that **can be used in place of** other products or services. i.e. used as replacements.

Note 13: Complements

Products or services that **are consumed together**.

Note 14: Normal Goods

As **income increases**, consumer demand **increases** for the product or service. As **income decreases**, consumer demand **decreases** for the product or service

Note 15: Inferior Goods

As **income decreases**, consumer demand **increases** for the product or service. As **income increases**, consumer demand **decreases** for the product or service

1.4 Factor Causing a Shift in Supply

- Change in number of suppliers in the market
- Change in expectations of future selling price
- Change in level of input costs
- Change production to a new, substitute product
- Changes in technology
- Changes in government taxes on a product

Again, a shift assumes **price remains fixed** and some other factor changes to affect the quantity supplied by the producer

1.4.1 A Shift in Supply

$$\begin{aligned}\text{Profit} &= \text{revenue} - \text{expenses} \\ &= \frac{\text{price}}{\text{unit}} \times \text{quantity} - \text{expenses}\end{aligned}$$

1.5 Elasticity

Note 16: Elasticity Definition

An economic term used to measure the **sensitivity** of one variable (e.g. quantity demanded) to a change in another variable (e.g. price).
e_d: Price elasticity of demand
e_s: Price elasticity of supply

- The percentage change in quantity demanded divided by the percentage change in price

$$e_d = \frac{\%\Delta Q_d}{\%\Delta P}$$

- Is a number less than 1, equal to 1, or larger than 1
- Is a dimensionless number (no units)

- e_d will be a negative number since "demand" is a downward sloping relationship
- For convenience we **drop the negative sign** and use the absolute value when talking about elasticity of demand, e_d

$$e_d = \frac{P_i}{Q_i} \times \frac{1}{\text{slope of demand curve}}$$

1.5.1 Point Price Elasticity of Demand

1. Measures the percentage change in quantity demanded in response to a one percent change in price
2. Varies depending on the **price** at a point on the demand curve (P_i)
3. Varies depending on the **quantity** at a point on the demand curve (Q_i)
4. Varies depending on the **slope** at a point on the demand curve

1. **Inelastic** if $e_d < 1$
2. **Unit Elastic** if $e_d = 1$
3. **Elastic** if $e_d > 1$

1.5.2 Calculating Midpoint Elasticity

How can you realistically find the slope of the demand curve at a particular price and quantity demanded? Is demand really linear? An approximation to the **point price elasticity** is called the **midpoint price elasticity**.

$$\begin{aligned} e_d &= \frac{\Delta Q / Q_{\text{Average}}}{\Delta P / P_{\text{Average}}} \\ &= \frac{\Delta Q / \left(\frac{Q_A + Q_B}{2}\right)}{\Delta P / \left(\frac{P_A + P_B}{2}\right)} \\ &= \frac{\Delta Q / \left(Q_A + Q_A\right)}{\Delta P / \left(P_A + P_B\right)} \end{aligned}$$

1.5.3 Summary

- If demand is **inelastic**, price increases, revenue increases
- If demand is **unit elastic**, revenue is maximized
- If demand is **elastic**, price increases, revenue decreases
- Elasticity is NOT constant along the demand curve
- As price rises, demand becomes **relatively more elastic** (or referred to as becoming less inelastic)

Factors affecting elasticity of demand

1. Availability of close substitutes
   - The more substitutes available for a product, the easier it is for consumers to switch when there is a price increase
   - Ability of consumers to switch easily implies there is intense competition
   - The **more competition**, the **more elastic** will be demand
2. Time involved from the time of the price change
   - When price change, consumers take time to adjust their spending habits
   - The more time that passes after a price rise, the more options consumers might be able to find to switch to another product
   - the **more time involved**, the **more elastic** will be demand
3. Essentials verses luxuries
   - The more **essential** it is for consumers to have an item, the **less likely they are to switch** to another product (e.g. razor blades for shaving)
   - A **luxury** item is non-essential, and so consumers are more easily able to **choose note to purchase** it (e.g. tickets to a day at the cricket)

- The **more essential a product**, the **more inelastic** will be demand

4. The proportion of a consumer's budget spent on the product
   - The larger the proportion spent on an item, the more careful a consumer will be before making the purchase. The smaller the proportion, the less worried they will be about the purchase
   - The **more** a product takes from a consumer's budget, the **more elastic** will be demand

1.5.4 Price Elasticity of Supply

1. It varies depending on the **price** at a point on the supply curve (P_i)
2. It varies depending on the **quantity** at a point on the supply curve (Q_i)
3. It varies depending on the **slope** at a point on the supply curve

1.6 Perfectly Competitive Supply

An understanding of production **costs** and assessing their impact in making decisions. Using **marginal analysis** to help make decisions to **maximise profits** in **competitive markets**.

1.6.1 Perfectly Competitive Market Features

1. **Many buyers and many sellers** (small in size). No one buyer or seller is able to dictate price
2. **Easy entry and exit into the industry** (no barriers or large exit costs)
3. **Products are homogeneous** (identical with no ability to differentiate, all perfect substitutes)
4. **Resources are perfectly mobile** (no transport costs, able to freely enter and leave)
5. **Perfect knowledge and information** (both buyers and sellers) about others in the industry

Note 17: Short Run

That time period when **some inputs are fixed (e.g. capital)** and **some inputs can change**

Note 18: Long Run

That time period when **all inputs can change**, including technology and physical size of the operations

Note 19: Total Fixed Costs (TFC, in $)

Costs that remain constant as output either increases or decreases

Note 20: Total Variable Costs (TVC, in $)

Costs that vary as the output increases or decreases. e.g. rent, insurance

Note 21: Total Costs (TC, in $)

Includes all the costs a firm uses in its production.

$$TC = TFC + TVC$$

Note 22: Average Total Costs (ATC, in $/unit)

The total cost of producing output quantity Q (units), divided by the total output quantity.

$$ATC = \frac{TC}{Q}$$

Note 23: Average Variable Costs (AVC, in $/unit)

Total variable costs of producing **output quantity Q (units)**, divided by the total output quantity.

$$AVC = \frac{TVC}{Q}$$

Note 24: Marginal Cost (MC, in $/unit)

The **change in total cost** to a firm to **produce one more unit** of a good or service. Note the units are **$/unit**, and one extra unit of output can be a very large number.

$$MC = \frac{\Delta TC}{\Delta Q}$$

Costs are one thing, but what about Profit?

1. Profit = Revenue - Expenses
2. Revenue = price * quantity
3. Price depends on many things (elasticity of demand, differentiation, substitutes etc..., and the type of **Market Structure**)
4. For simplicity at this stage, consider a **Perfectly Competitive Market**

1.6.2 Loss Minimising Analysis

Minimise any losses when $AVC < P < ATC$ by producing an output at the point where $P = MC$. All of the variable costs will able to be paid under these conditions, and any losses will be minimized. Only part of the fixed costs will able to be paid, not all. Will a business be able to survive? For how long?

1.7 Quest for profit and the Invisible Hand

Three different definitions of profit:

- Accounting Profit
- Economic Profit
- Normal Profit

Note 25: Explicit Costs

The actual payments (or transactions) a firm makes to other suppliers for the factors of production it needs

Note 26: Implicit Costs

The next best alternative sacrificed when the firm decided to use its resources in the chosen industry it operates in. i.e. implicit cost is an **opportunity cost**

$$\begin{aligned}\text{Account Profit} &= \text{Revenue} - \text{Total Cost}\\ &= \text{Revenue} - \text{explicit cost}\\ \text{Economic Profit} &= \text{Revenue} - \text{Total Cost}\\ &= \text{Revenue} - (\text{explicit cost} + \text{implicit costs})\\ &= (\text{Revenue} - \text{explicit cost}) - \text{implicit costs}\\ &= (\text{Accounting profit}) - \text{implicit costs}\end{aligned}$$

If economic profit is a "positive number", the profit is called *excess profit*, *super normal profit*, or *pure profit*.

Note 27: Economic Profit

Determins the owner's incentive to keep their resource in the current industry or exit and use their resources more efficiently elsewhere.
If **economic profit** is **positive**, this will act as an incentive for owners to **remain** in the industry, but it will attract new entrants.
If **economic profit** is **negative**, this will act as an incentive for owners to **exit** the industry and deter new entrants from entering.

When economic profit is 0, this is referred to as "normal profit".

Note 28: Normal Profit

Normal profit indicates the opportunity cost of resources (cost of capital) has been covered by revenues generated by business operations where the resources were used. No incentive (attraction) for new competitors to enter, or currently operating firms to leave.

1.7.1 Adam Smith's Invisible Hand Theory

Market price in free market system serves two functions:

Rationing function: distributes scare goods to consumers who value them the most

Allocative function: directs resources away from overcrowded markets and towards underserved markets

> Actions of self interested buyers and sellers, all acting independently, will often result in the socially optimal allocation of resources.

Smith believed **economic** profit and **economic** loss are the only forces needed to drive the system of efficient allocation of resources

- If economic **profit is positive**:
  - incentive for existing owners to stay in the industry
  - incentive for new owners to enter into the industry
- If economic **profit = 0 (normal profit)**:
  - no incentive for existing owners to exit or new owners to enter the industry
- If economic **profit is negative**:
  - acts as an incentive for existing owners to exit the industry and cause others to not want to enter

1.8 Monopoly and Imperfect Competition

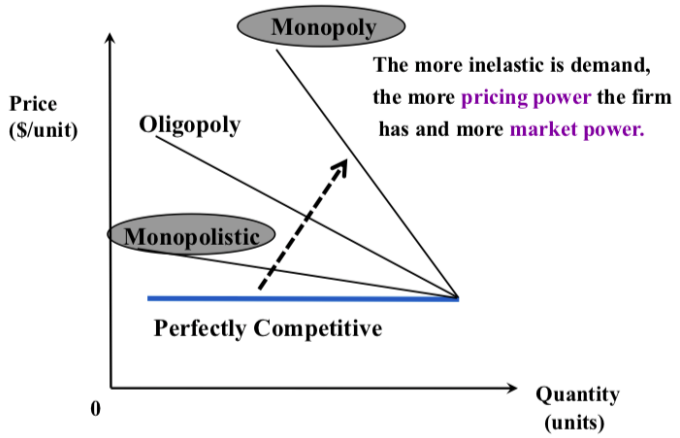

Figure 1.6: Demand for Perfectly and Imperfectly Competitive Firms

1.8.1 Perfectly Competitive Firm

- demand is perfectly elastic (horizontal)
- is a **price taker**, maximizing profit where quantity exists so that $P = MC$

1.8.2 Imperfectly Competitive Firm

- faces a downward sloping demand curve
- is a **price maker**, maximizing profit at a specific output quantity (*not* jsut selling whatever it likes and charging any price!)

1.8.3 (Pure) Monopoly)

Note 29: Definition

- a firm that is the **only** seller of a product or service
- it has no **close** substitutes
- the monopoly (firm) supply is the **market supply**

Why Monopolies Exist?

- **Entry** into the industry is **deliberately blocked** (barriers to entry) allowing only one firm to supply the market
- **Control over key raw material resources** to produce a product
- **Network externalities** = a product's usefulness increase as more consumers adopt it and use it
- **Economies of Scale** (will reduce ATC)

Threat to Monopoly's Existence

- Changes to government legislation (law) to break a monopolies control and power over consumers
- The rise of potential competitors who have large amounts of cash, with possibly new improved technologies desired by consumers (evolution of markets)
- Economic profits just so high that new entrants are attracted

How does a Monopoly Maximize Profit?

$$\text{Marginal Revenue} = \text{Marginal Cost}$$
$$MR = MC$$
$$MR = \frac{\Delta\text{Revenue}}{\Delta\text{Quantity}}$$

A Profit Maximizing Monopoly

- Taking the ATC curve for a monopoly as U-shaped and demand linear, MC should cut ATC at its minimum
- The profit maximizing output quantity can be found where MR and MC intersect

When **MR** $>$ **MC** for a given level of output, the firm should **increase** output to maximize profit. When **MR** $<$ **MC** for a given level of output, the firm should **decrease** output to maximize profits.

Impacts of Monopoly on Economic Surplus

- Only in perfectly competitive markets, will there be no loss of economic efficiency
- In reality, few markets are perfectly competitive, and the MR curve is downward sloping
- When $MR = MC$, there will always be some dead weight loss. The closer the price is to MC, the smaller the dead weight loss and inefficiency
- The ability to exert **market power** (how high price can be set price above MC for a given output quantity) dictates the extent of any dead weight loss

Impacts of Market (Pricing) Power

Definition: A firm that profit maximizes, at an output quantity where **price** is much larger that **MC**, is said to have **Market Power**. For a single supplier, the higher the price is able to be set above MC, the more **monopoly power**.

Government Policies to deal with Monopolies

- Monopolies produce economic inefficiencies. Governments aim to improve economic efficiency using **regulations**
- Regulators aim to **monitor prices** set by monopolies to more closely reflect a **competitive outcome**
- Not only through price regulation, governments can also dictate the quantity to be supplied by monopoly, as well as the timing/amount of any new investments

1.8.4 The role of the ACCC

Australian and Consumer Competition Commission (ACCC) = a "watch dog" type organisation to monitor competitive behaviour of firms, and to focus on:

1. promoting competition, openness and efficiency in the Australian economy
2. prosecuting firms who breach the Australian Consumer Law 2011 and who engage in anti-competitive and illegal behavior (price fixing, collusion, cartels)
3. assessing mergers or takeovers for any substantial lessening of competition

1.8.5 Monopolistic Competition

Feature:

- A larger number of similar firms exist
- Many close substitutes exist
- Few barriers to entry into the industry

But an important difference = **products/services** can be slightly **differentiated** (i.e. not identical) giving the firm some pricing power (downward sloping demand)

Differentiation the key

- some differentiation of product for the firm is possible, allowing the firm some pricing power so the demand curve for the firm is slightly downward sloping
- the demand curve for the firm is slightly downward sloping, since a price increase of its product causes a decrease in the quantity demanded by customers. MR will also be downward sloping

1.8.6 Conclusion

- From **economist's** view, the existence of a single supplier in the market (monopoly) results in an inefficient allocation of resources (dead weight losses)
- From a **firm's** perspective, resources satisfying opportunities to develop market power, earn economic profits, and increase a firm's value
- From a **government's** view, firms are encouraged to innovate to benefit society, but government regulation is used to limit the extent of the firm's profits

Imperfect competition is when a firm has at least some ability to dictate the selling price (demand is downward sloping). This is the same as saying a firm has some market power (pricing power). Imperfectly competitive markets include monopoly, monopolistic, and **oligopoly** firms.

Note 30: Price Discrimination

Occurs when the **same item** is sold at **different prices** to **different groups** of people, depending on customer's willingness to pay

1.8.7 Different Types of Price Discrimination

First Degree (perfectly) Discrimination

- The firm must know the maximum amount each and every customer will pay for their product or service
- Each customer can be charged a different price for the same product and the product will be sold to them
- The full consumer surplus is extracted from each customer, so firm maximizes profit

Second Degree Discrimination

- A firm takes part of the consumer surplus (but not all)
- Different prices are charged for different "blocks" of quantities consumed

- Results in larger revenues and profits compared to charging a single lower price for larger quantities

Third Degree Discrimination

- Different **market segments** charged different prices because of **differences in price elasticity** of demand
- Economic models can be used to show how a firm should operate to maximize profits

Peak Load Pricing

- Suppliers face peak (maximum) demands at particular times (hourly, daily, weekly, yearly)
- Pricing based on efficiency measures and reflects costs of supply (i.e. marginal cost)
- Typically MC will be higher for suppliers in peak period times (because of capacity restraints for production). Prices are higher in peak periods

Note 31: Why use it?

A firm's profit will be larger by using price discriminating compared to charging all buyers the same price. Firms can aim to extract as much expenditure from consumers as possible by understanding how much they are willing to pay. Theoretically, a firm aims to exert market power to **capture** as much **consumer surplus** as possible and convert it into **producer surplus**.

Comments:

- is not necessarily a bad thing
- results in an increase in the level of output compared to if a single price is charged
- in increasing output toward the perfectly competitive output level, price discrimination can be thought of as a "good thing" in terms of enhancing economic efficiency

1.8.8 Oligopoly Market

A market structure where a small number of **interdependent** firms compete (game theory).
Key Features include:

1. Firms are large, posses a larger market share (say 80%), and a dominate production
2. Large initial capital investment needed to start operations (barriers to entry high)
3. Price is set above marginal cost for the profit maximizing condition
4. Typically there are only a few substitutes available
5. Products are slightly differentiated
6. Able to make significant economic profits

Why an Oligopoly Market can exit

Existence primarily from barriers to entry

1. Large capital investment needed to enter
2. Economies of scale exits (which pushes ATC down as output increases so others are unable to compete)
3. Government imposed restrictions on firms from entering through patents, licensing agreements, tariffs and quotas on foreign competition

Note 32: Strategic Interdependence of Oligopoly Fi

The **actions of one firm** can have major impacts on **actions of other firms** in the same market

Market Equilibrium in Oligopoly Markets

For perfect competition, monopolistic, and monopoly markets, **profit is maximized** then $MR = MC$. For Oligopoly markets, there is **no simple profit maximizing rule!** Generally, equilibrium is said to exist when a firm is doing the best is can, given what other firms are doing, and when it has no reason to change price or inputs. Interactions (and firm interdependence) is analysed using **game theory**. "Business is all about the game!" Game theory characteristics:

- **Players**
- **Strategies** (possible actions players can choose)
- **Payoffs** (outcomes from strategies)

1.8.9 Game Theory Analysis

Dominant Strategy: a strategy for a firm that gives it a *higher payoff* no matter what strategy the other players in a game chose. That is, no matter what a competitor does, the firm will always chose the same strategy

Dominated Strategy: any other strategy available to a player who has a dominant strategy (where the dominant strategy leads to a *lower payoff* than if the dominated strategy was chosen)

Prisoner's Dilemma Game Theory Analysis

1. It is a game where each player has a dominant strategy, and when each plays their dominant strategy, the resulting payoffs are smaller than if each had played a **dominated** strategy
2. It is an example of a **Nash Equilibrium** when each player's adopted strategy is the best that can be chosen, given the other player's chosen strategies

Prisoner's Dilemma and Imperfectly Competitive Firms

Collusion

- An agreement between firms to charge the same price (price fixing) to avoid competing
- Formation of Cartels (oil cartel OPEC)
- Illegal in Australia (ACCC watching)

Cartels explicitly agree to cooperate in price. Aim is to earn an economic profit. Characteristics needed for product/service:

1. Inelastic demand
2. Monopoly pricing power
3. Cartel supplies a large percentage of product to the entire market
4. Cartel members must maintain the agreed high price and NOT cheat! Otherwise price falls

Repeated Prisoner's Dilemma Game

A game where the same two players play a prisoner's dilemma over and over many times. Outcomes from all previous plays are observed before the next play begins

Tit-for-tat repeated prisoner's dilemma game

A strategy for playing the repeated prisoner's dilemma game in which a player cooperates on the first move, then mimics the other player's last move on each successive moves

Credible threat

- A threat to take action that is in the threatener's interest to carry out
- It is one that can be believed could happen as that player has the ability to carry through on the threat

Credible promise

- A promise to take action that is in the promiser's interests to keep, when the time comes to deliver

Games where Timing matters

So far we have considered competitive and cooperative **simultaneous** games. However, many games also include a **time dimension** where on player gets to go first. These games can be analyzed using a diagram called a **decision tree**. The decision tree describes the possible moves players can make and shows the sequence of **possible moves over time**. The tree also lists the payoffs that correspond to each possible combination of moves.

Chapter 2

EMC Tutes

2.1 Supply and Demand

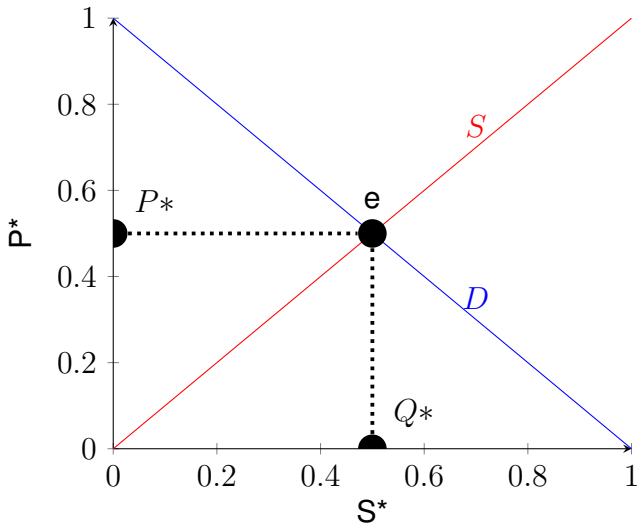

Figure 2.1: Left Shift in demand

2.2 Perfect Competition

- Free entry and exist
- Homogeneous Product
- Mark clear at equilibrium
- Perfect information
- Large number of buyers and sellers
- Firms of price taker

2.3 Market Equilibrium

A Demand Curve is downward sloping because people are more likely to be excited about buying something when it is cheap.

2.4 When to Shift

A **change in quantity demanded** results in a shift **along** the demand curve.
A **change in the demand** results in a shift **of the** demand curve.

A **change in the quantity supplied** results in a shift **along** the supply curve.
A **change in supply** results in a shift **of the** supply curve.