Chapter 4 – Indirect Taxes, Subsidies and Price Controls
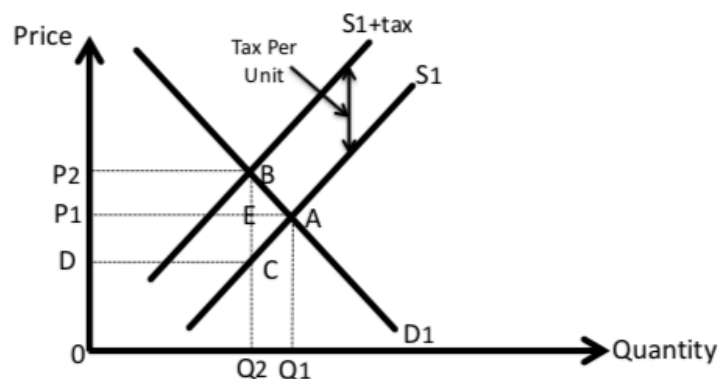
4.1 Indirect Taxation

> ➤ **Indirect Tax – An expenditure tax that increase a firm's cost of production but can be transferred to consumers via higher prices**

Why do Governments Levy Taxes?

1) **To raise revenue to fund essential public expenditure and transfer payments**. Governments need to raise finance for their expenditure programmes. They can borrow a limited amount of money for this but most must come from taxation to avoid inflation and excessive increases in national debt over time.

2) **To redistribute income**. If the government argues that the distribution of income is inequitable, to redistribute income, it may impose or increase progressive taxation to reduce the income of some groups in society and use the money collected to increase the income of other groups.

3) **To correct market failures.** Governments can intervene in markets by introducing or raising cigarette taxes, carbon taxes, alcohol taxes etc to reduce consumption and production. In this way taxation can be used to reach allocatively efficient outcomes in failing markets.

4) **To manage the macroeconomy**. Taxation can have an important influence on the macro-economic performance of the economy. Governments may change tax rates in order to influence variables such as growth, inflation, unemployment and the current account.

5) **To protect domestic firms from foreign competition.** Tariffs are taxes on imports that raise the price of imports. This reduces the level of imports into a country allowing domestic firms to survive and grow.

Impact of Indirect Taxation

1) **Supply Curve:** Shifts to the left from S1 to S1+tax

2) **Price & Quantity:** Price increases from P1 to P2 and Quantity decreases from Q1 to Q2

3) **Producer Revenue:** Decreases from P1AQ10 to DCQ20

4) **Government Revenue:** P2BCD

5) **Consumer Burden:** P1P2BE

6) **Producer Burden:** P1ECD

7) **Welfare Loss:** ABC

An indirect tax is an expenditure tax that increases a firm's costs of production but can be transferred to consumers via higher prices. An indirect tax will therefore shift the supply curve in the market to the left from S1 to S1+tax as it increases the cost of production for firms. The vertical distance between the two supply curves reflects the value of the tax. This increases the price of the product from P1 to P2 and due to the law of demand, where a higher price discourages consumption, quantity falls from Q1 to Q2.

1) **Consumers.** Consumers suffer as a result of the indirect tax, paying a share of the tax P1P2BE due to higher prices from P1 to P2, reducing their consumer surplus. The poor will suffer proportionately more than the rich however as indirect taxes are regressive, meaning they take a greater proportion of the poor's income than they do of the rich which could widen income inequality in society.

Evaluation 1) Consumers are burdened even more if the **demand for the product is price inelastic** due to the good being addictive in nature perhaps. In this sense, producers know that they can transfer more of tax onto consumers with there being a proportionately smaller decrease in quantity demanded burdening low income consumers the most. The opposite is true where demand is price elastic. In this case, the burden of the tax will fall more heavily on producers knowing that increases in price would lead to large falls in total revenue.

Evaluation 2) Consumers suffer short term pain from this tax but **there may be a long term gain** if such taxes generate enough revenue for there to be greater spending on social goods and services in the economy such as education, healthcare and infrastructure which would improve the lives of poor in particular who rely more heavily on these services.

Evaluation 3) If the government is looking to **discourage consumption of a de-merit good**, in this sense solving a market failure, it can be argued that burdening consumers is a weak argument as this is the exact intention of the policy. Reducing consumption, production and thus quantity in the market from Q1 to Q2 could well be reaching the socially optimum level of output increasing welfare in the market and not generating a welfare loss as the diagram suggests.

2) **Producers and Workers.** Producers suffer as this tax raises their costs of production where they have to pay a share of the tax to the government indicated by the rectangle P1ECD, leading to a fall in revenue from P1AQ10 to CDQ20. This could mean reducing the size of their workforces due to the lower quantity produced in the market to reduce their costs and remain profitable impacting on workers by increasing unemployment.

6.7 Price Controls and Market Failure

Minimum Price to Solve De-Merit Good and Price Volatility Market Failure

Minimum prices are price floors set above the equilibrium price in the market to **discourage consumption of de-merit goods.** For goods like alcoholic drinks, minimum prices can be used to raise the price above equilibrium levels from P1 to Pmin to internalise the negative externality and discourage consumption, solving over consumption issues and bringing the market to the allocative efficient production level from Q1 to Q* eradicating a prior misallocation of resources.
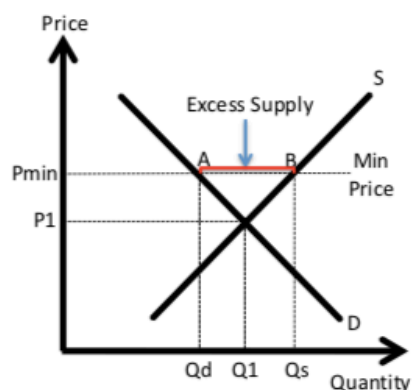
Furthermore minimum prices can **protect producers** of primary commodities from price volatility. The demand and supply of primary commodities is highly price inelastic implying that when either the demand or the supply curve shifts, often due to changing weather conditions, price swings can be large, destabilising the income of agricultural producers. A minimum price at Pmin will provide a stable income for farmers allowing them to sustain their livelihoods and provide for their families especially when the free market price would otherwise be much lower, at P1 for example.

Minimum Price to Solve De-Merit Good Market Failure Cons/Evaluation

1) Demand for alcohol for example is **price inelastic**. This is because it is addictive and there aren't many good substitutes available. Therefore as price increases due to the minimum price, quantity will decrease due to the law of demand, but proportionately less than the price increase. The decrease in quantity will help to reduce the misallocation of resources but not by enough to fully solve the market failure if Q* is below the new quantity demanded and thus consumed in the market. In this sense, consumers are absorbing a large proportion of the price rise and not reducing consumption greatly. Any overconsumption and overproduction problems will remain.

2) The poor will suffer proportionately more than the rich as minimum prices are **regressive**, meaning they take a greater proportion of the poor's income than they do of the rich, which could widen income inequality in society. Consumers are burdened even more if the **demand for the product is price inelastic** due to alcohol being addictive in nature.

3) There can be **unintended consequences** of imposing a minimum price on alcohol. For example, firms may shut down or leave the country causing unemployment. A black market may form where consumers can find an alternative supply at a lower price or consumers may switch to legal alternatives that are actually worse for them just because they are cheaper than the better quality but higher priced alcoholic drinks. This could be dangerous for the consumer as they do not know what is in the product they are consuming, worsening the extent of the negative externalities generated. Once more, the government has created a new market failure, which needs spending to police. Consumers may go across the border and smuggle alcohol where prices are lower. Unintended consequences are costs of the policy and if significant, can outweigh the benefits resulting in government failure.

4) **Knowing the right level to set the minimum price is extremely difficult.** This is because putting an accurate value on the negative externalities generated is highly complex in reality. There are ways this can be done but not perfectly. As a consequence, the minimum price might be set too low where the externality is not internalised thus the price increase is not large enough to reduce quantity to the socially optimum level of output. If the minimum price is set too high the unintended consequences mentioned above can occur and lead to government failure. Other examples include firms shutting down or leaving the country causing unemployment.

5) Minimum prices negatively impact **individual freedom, liberty and choice.** This can occur when households feel that consumer decision making is solely individual responsibility and therefore heavy handed intervention is overly and unnecessarily paternalistic, more so if the government is lacking information when intervening. As a consequence, individuals who feel hurt by such intervention are likely to find a way around the minimum price, perhaps by accessing the black market or making their own alternatives or could protest aiming to reverse the policy action.

### Minimum Price to Solve Price Volatility Market Failure Cons/Evaluation

1) The government having created an excess supply of AB must now buy it up which is **costly**; this is known as **intervention buying**. The first major issue is what happens with the excess stock. Destroying it would be highly wasteful, storing it very expensive and dumping it abroad politically sensitive given the impact dumping has on producers abroad. Furthermore the large financial cost of intervention buying needs to be funded perhaps by tax rises in the future or spending cuts to public services both of which will hurt consumers. It can be argued that in developing countries especially this is not an efficient use of government revenue, which could have been used more productively elsewhere in the economy to promote development.

2) The assumption that minimum prices will improve the living standards of primary commodity producers depends heavily on whether **intervention buying of the excess supply AB takes place**. In developing countries, governments may not be able to afford it leaving the producers to deal with storing or destroying the excess stock – a waste of resources and a hit to profitability for the producer going against the intentions of the policy.

Price/Costs/Revenue
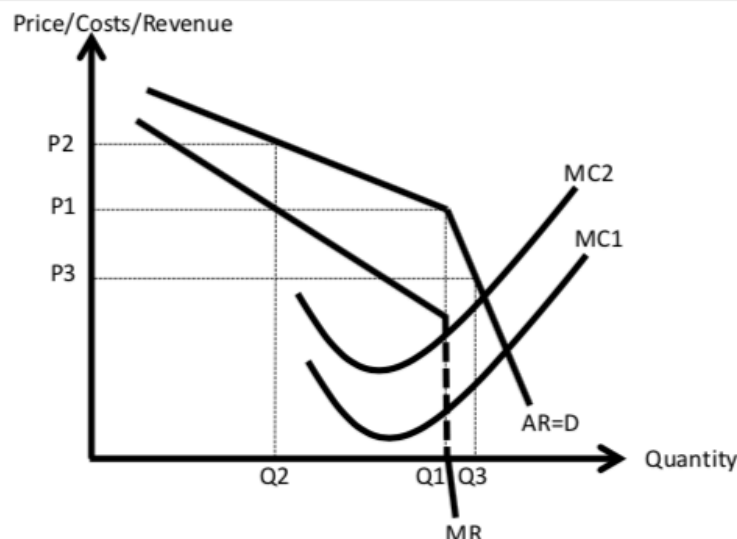
2) **Firms perhaps do not need to change their price from P1**. This is because the corresponding marginal revenue curve possesses a vertical discontinuity and if costs of production increase in this vertical gap from MC1 to MC2 for example due to a rise in raw material prices or an increase in wages, a profit maximising oligopoly producing at MC=MR will continue to produce at output level Q1 and price of P1.

3) **Game theory** can also help explain the behaviour of oligopolists. Take the following prisoner's dilemma game and payoff matrix for example;

		Firm B	
		£20	£19
Firm A	£20	£25m, £25m	£5m, £30m
	£19	£30m, £5m	£15m, £15m

Two firms in oligopoly can either charge £19 or £20 for a product, always making the decision that maximises their payoff (the yearly profits in the cells). Decisions are based on the reactions of rivals.

For example if firm A charged £20 or £19, firm B should always charge £19 to maximise profits. If firm B charged £20 or £19, firm A should always charge £19. There clearly is a dominant strategy here for both firms to charge £19 with long term profits being made of £15million a year, an equilibrium that can be sustained over time. Interdependence leads both firms to always take the lower price option to avoid the sting of being undercut themselves. This is the Nash Equilibrium further explaining a reason for price rigidity in oligopoly despite this not being the most profitable outcome for both firms.

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4) If both firms are able to organise a situation whereby £20 is charged, greater profits can be made of £25million each. This is a cartel agreement or collusive oligopoly where firms join together to fix prices or quantities essentially becoming a monopoly in the market. The payoff matrix above also explains why collusion is unlikely to hold given the very strong incentive for a firm in a cartel to cheat on the agreement and lower the price charged to making higher profits of £30million. This will not last however as the rival will lower prices straight away resulting in the Nash Equilibrium of £19 being charged by both companies with a £15million profit share.

Oligopoly Performance – Potential Outcomes

1) Firms can **compete on price** despite the rationale of the kinked demand model. The aim of price reduction is to try and maximise market share in the long run by sacrificing profits in the short run. The end result will be a ferocious price war benefiting consumers with higher consumer surplus whilst harming producer revenue and profitability.

2) Firms can **compete on non-price factors** by strengthening advertising, developing brand loyalty, improving product and service quality. This again is in the interests of consumers and can lead to market share gains by producers if successful.

3) Firms can break interdependence by **colluding and forming a cartel**. A formal agreement to fix prices or quantities is **overt collusion** where the cartel acts as a monopolist, generating outcomes that are against the public interest. Such behaviour is illegal.

4) Firms can break interdependence by engaging in **tacit collusion or 'price leadership'**. This is where an informal agreement is made between firms not to engage in a price war or for firms to follow price changes made by the dominant firm in the industry. This prevents price competition going against the public interest but is harder to prove than overt collusion.

Oligopoly Performance Cons

Collusive oligopoly (cartel) promotes undesirable monopoly outcomes for society as the diagram shows.
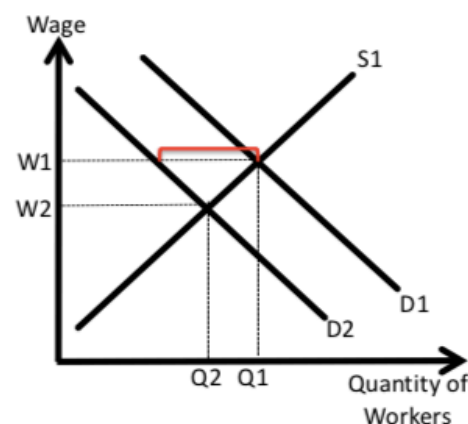
Price/Costs/Revenue
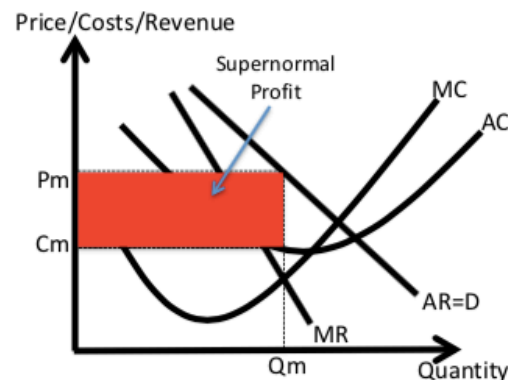
1) Cartels produce outcomes that are **allocatively inefficient**. This is because they exploit consumers by charging prices greater than marginal cost at the profit maximising level of output, Q1. At this point of production, resources are not allocated according to consumer demand with consumers getting a lower quantity than they desire. Consumer choice is restricted and prices are high reducing consumer surplus in the market. The quality of the product being sold may suffer too given the lack of competitive forces to meet the needs and wants of the consumer.
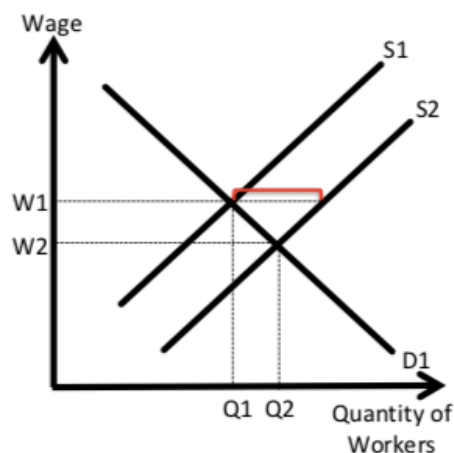
The Labour Market – Demand Shift Left

The market is initially in equilibrium with employment at Q1 and the wage rate at W1. The demand curve shifts to the left from D1 to D2 due to a decrease in labour productivity, decrease in demand for the final product or decrease in price for the final product. At the same wage rate of W1 there is excess supply of labour where more workers are willing and able to work than firms need putting downward pressure on wages from W1 to W2. Lower wages signal excess supply to firms and workers and the need for fewer labour resources in the market. Lower wages provide an incentive for workers to work fewer hours or to leave the market entirely shown via a contraction along the labour supply curve. Lower wages ration labour resources by encouraging greater demand as workers with lower MRPs now justify employment shown via an extension along the labour demand curve. A new equilibrium is formed at W2Q2 with a lower wage from W1 to W2 and less labour allocated to producing goods/services in this market from Q1 to Q2. This is a long term equilibrium without excess supply or excess demand – an efficient allocation of labour.

The Labour Market – Supply Shift Right

The market is initially in equilibrium with employment at Q1 and the wage rate at W1. The supply curve shifts to the right from S1 to S2 due to a decrease in the wage of substitute occupations etc. At the same wage rate of W1 there is excess supply of labour where more workers are willing and able to work than firms need putting downward pressure on wages from W1 to W2. Lower wages signal excess supply to firms and workers and the need for fewer labour resources in the market. Lower wages provide an incentive for workers to work fewer hours or to leave the market entirely shown via a contraction along the labour supply curve. Lower wages ration labour resources by encouraging greater demand as workers with lower MRPs now justify employment shown via an extension along the labour demand curve. A new equilibrium is formed at W2Q2 with a lower wage from W1 to W2 and more labour allocated to producing goods/services in this market from Q1 to Q2. This is a long term equilibrium without excess supply or excess demand – an efficient allocation of labour.

The Labour Market – Supply Shift Left

The market is initially in equilibrium with employment at Q1 and the wage rate at W1. The supply curve shifts to the left from S1 to S2 due to an increase in the wage of substitute occupations, higher barriers to entry, a reduction in non-monetary benefits etc. At the same wage rate of W1 there is excess demand for labour; fewer workers are willing and able to work than firms are demanding. This puts upward pressure on wages from W1 to W2. Higher wages signal excess demand to firms and workers and the need for more labour resources in the market. There is an incentive at higher wages for workers to work longer hours and for more workers to enter the market shown via an extension along the labour supply curve. Higher wages ration labour resources by discouraging demand for labour as now only workers with a high enough MRP will justify employment shown via a contraction along the labour demand curve. A new equilibrium is formed at W2Q2 with a higher wage from W1 to W2 and less labour allocated to producing goods/services in this market from Q1 to Q2. This is a long term equilibrium without excess supply or excess demand – an efficient allocation of labour.
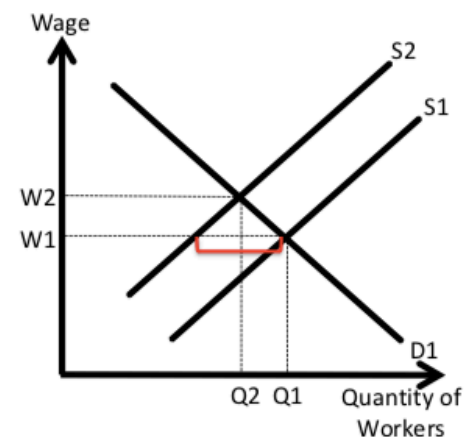
Perfectly Competitive Labour Market Characteristics

1) There are **many (infinite) individual suppliers of labour (workers) to the market and many individual buyers of workers (employers).** This implies that firms must compete with one another to offer wages that attract workers they need and that workers do not have excessive bargaining power via a trade union to push up wages as there is alternative and individual competing supply.

2) All workers in the industry are **homogenous** with identical skill sets. Together with there being many workers and employers, firms are **wage takers** with no ability to exercise power in the market by setting their own wages. It makes no sense for firms to offer a wage higher than the equilibrium market wage as all workers are homogenous and so firms will be paying a higher wage unnecessarily reducing profit, when other workers could have been hired at a lower wage. Offering a lower than equilibrium wage, firms will not be able to attract workers to work for them as workers will move to substitute employer who offers the higher equilibrium wage. Therefore **the marginal cost and average cost for a firm operating in a perfectly competitive firm is equal to the wage**, drawn horizontally.

3) There are **no barriers to entry** into the profession such as training periods, skills and qualifications required. There are also **no barriers to exit** a profession such as notice periods or redundancy payments for employers. Therefore movement into and out of a labour market is free and costless for both workers and employers.