Price Mechanism & Applications – Summary

Important: This set of summary notes does NOT replace the importance of the main set of notes in providing a clear understanding of the topic that is required in the A Levels.

Check list – Key requirements.

Part (1)

- Explain how the price mechanism allocates resources in a free market
- Identify the determinants of demand and supply, and explain how they influence demand and supply
- Explain and analyse how prices are determined by free market forces of demand and supply. Ability to explain simultaneous shifts of both demand and supply.

Part (2)

- Define the concepts of price elasticity of demand/supply (PED/PES), cross elasticity of demand (CED) and income elasticity of demand (YED).
- Explain the determinants of PED, PES, CED and YED.
- Analyse the extent of changes in price and quantity in response to shifts in demand or supply, using PES or PED respectively.
- Analyse the change in revenue in response to changes in price using PED.
- Analyse the direction and extent of shift in demand in response to changes in price of related goods or income, using CED or YED respectively.
- Explain the relevance of PED, CED and YED to a firm's decision-making.
- Define the types of government intervention such as taxes (direct vs indirect), subsidies (direct vs indirect), price controls and quantity controls.
- Distinguish between price floor/ceiling, explain the resultant surplus/shortage, and analyse the size of the surplus/shortage using PED and PES.
- Explain the mechanism of the different government interventions in the market, and the effects on price, quantity, welfare and government revenue/expenditure.
- Explain the determinants of labour demand and labour supply, and how they interact to determine wage and employment.

Key information

Part (1)

- The price mechanism is the ***invisible hand*** that allocates resources, based on the self-interest of consumers and producers, to result in the right mix of goods and services for society.
- **Market Adjustment Process / Price Adjustment Mechanism:** (fall in price when dd falls) – At the initial price, there is a surplus in the market since quantity supplied exceeds the quantity demanded resulting in a downward pressure on the price. To sell their surplus, producers will begin to lower prices. As price falls, consumers are willing and able to buy more causing quantity demanded to increase. As price falls, producers will also be less incentivised to produce due to a fall in profitability, causing quantity supplied to decrease.
- The Law of Demand states that the **quantity demanded** of a good/service is <u>inversely related</u> to its **price**, ceteris paribus. This can be explained by the Law of Diminishing Marginal Utility which states that beyond a certain point of consumption, each extra unit consumed gives less additional utility than previous units. In maximising utility with a given budget, the rational consumer will increase the quantity demanded as price decreases, and vice versa.

- The demand curve is downward sloping due also to the substitution and income effect.
- Factors affecting the demand curve (shift):
    - Taste and Preferences
    - Seasonal changes / climate
    - Expectation of future prices
    - Income
    - Prices of related goods
        - Substitutes
        - Complements
    - Derived demand
    - Govt policy
        - Direct subsidy / Tax
        - Interest rates
        - Exchange rates
- Law of Supply - The quantity supplied is directly related to the price of a product. The higher the price of a good, the greater the quantity supplied and vice versa, ceteris paribus.
- Factors affecting the supply curve (shift):
    - Cost of Production / Prices of Factors of Production
    - Innovation / State of Technology
    - Natural factors
    - Number of firms
    - Government Policies
        - Indirect Taxes / Subsidies
    - Prices of related goods
        - Joint supply
        - Competitive supply
    - Expectation of future prices
- Economic Welfare
    - Consumers' Surplus - is the difference between the maximum amount that consumers are willing and able to pay for a given quantity of a good and what they actually pay.
    - Producers' Surplus - is the difference between the amount received by producers for selling their good and the minimum prices that they are willing and able to accept for supplying additional units of the good.
- 3 main functions of prices - the price mechanism seeks to address the resource allocation questions of what and how much to produce, how to produce and for whom to produce.
    - Signaling Function - prices communicate information to decision-makers. Rising prices give a signal to consumers to cut back on the buying or even withdraw from a market completely. However, the higher price gives a signal to potential producers to enter a market. Resources move or re-allocate to different industries due to this signalling function.
    - Incentives Function - motivates a consumer or producer to change his behaviour. Higher market prices of a good motivate existing producers to increase output due to the possibility of more revenue and higher profits (assuming firms maximise profits) while a fall in price of a good provides an incentive to consumers to increase their quantity of the good demanded as they seek to maximise their utility.
    - Rationing Function - Prices will ration the good/resource to consumers/producers who are willing and able to pay for it. Whenever there is a shortage, the market price will

increase and the effect is to discourage consumption and conserve resources. Consumers or producers who are not willing and/or unable to pay for the good/resource will be rationed out of the market.

- The price mechanism achieves allocative efficiency by clearing shortages or surpluses in markets through signalling.
- The price mechanism allows for productive efficiency to be achieved in competitive markets as the adjustment of factor prices in the factor markets act as a signal and incentive for producers to adjust their production methods.

Part (2)

- Price Elasticity of Demand (PED is a measure of the degree of responsiveness of the quantity demanded of a good to a change in its price, ceteris paribus.
    - PED: The sign of PED is normally negative because of the inverse relationship between price and quantity demanded.
    - Size ranges between 0 to infinity and indicates the sensitivity of consumers to price changes.
- Determinants of PED
    - Substitutes – Number and Closeness of substitutes
    - Habitual Consumption
    - Income – Proportion of Income spent on the good
    - Time period
- Application of PED - The concept of PED is most relevant when there are price changes, typically resulting from **changes in supply** in a perfectly competitive market. When supply changes, the extent to which price and quantity demanded changes depends on PED.
    - **Use of PED to explain changes in total revenue/total expenditure.**
    - Use of PED to make a few beneficial decisions – Pricing decisions. Non-pricing decisions to make it less price elastic in demand.

- Price elasticity of supply (PES) is a measure of the degree of responsiveness of the quantity supplied of a good to a change in its price, ceteris paribus.
    - PES: The sign of PES is normally positive because of the direct relationship between price and quantity supplied.
    - Size ranges between 0 to infinity and indicates the sensitivity of producers to price changes. The larger the magnitude of the coefficient the greater the sensitivity of producers to price changes.
- Determinants of PES
    - Level of Stock/inventory
    - Availability of Spare Capacity
    - Mobility of Factors of Production
    - Time horizon
    - Length of production period
- Application of PES - The concept of PES is most relevant when there are price changes resulting from changes in demand in a perfectly competitive market. When demand changes, the **extent to which price and quantity supplied ch**anges depends on PES.

    - PES is **not** relevant to explain changes in Total revenue. Because when demand changes, causing price to change, BOTH price and quantity will move in the same direction – regardless of whether PES is elastic or inelastic.
    - PES is most applicable to explain the Extent of change in price or quantity when demand changes. For instance, if PES<1 (e.g. oil), when demand increases, it explains a **sharp** increase in price.

- Cross Elasticity of Demand is a measure of the degree of responsiveness of the quantity demanded of a good to a change in the price of another good, ceteris paribus
    - CED: If CED is **positive** (CED > 0), the two goods are **substitutes**. If CED is **negative** (CED < 0), the two goods are **complements**.
    - The **magnitude** of CED indicates the **strength** of the relationship between the two goods – be it substitutes or complements. The closer the substitutes/complements, the greater the magnitude will be.
- Application of CED:
    - Price strategy: If the price of a close substitute falls, the firm has to respond by lowering the price of its good to prevent a huge loss of existing and potential customers. Note that this is different from PED's pricing strategy. In CED's case, it is a response to their competitor's price reduction, that the firm respond with a price cut.
    - Non-price strategy: Also, the firm could try to reduce the CED between its product and its substitutes by making its good less substitutable. This reduces the effect of its rival's pricing policies on the demand for the firm's product.

- Income elasticity of demand (YED) is a measure of the degree of responsiveness of the quantity demanded of a good to a change in consumers' income, ceteris paribus.
    - Sign: may be positive or negative, depending on whether the good is an inferior or a normal good (including necessity and luxury).
    - Magnitude: If positive and between 0 and 1: Necessity. If positive and greater than 1: Luxury.
- Determinants of YED
    - Degree of necessity
    - Level of income of the consumer base
- Application of YED:
    - Firms use YED in their business decision-making: Plan future output - During an economic boom, firms may strategise by channeling more resources into developing better quality products with YED > 1. Likewise, during a recession, firms channel more resources to inferior or necessities.

- **Limitations in the application of elasticity concepts**
    - Computation issues
    - Issues with prediction
    - Cost concerns
    - Ceteris paribus assumption

Government Intervention in Markets

Taxes - Taxes are compulsory payments to the government.

- **Indirect Taxes** - taxes on goods and services and are paid to the tax authorities by the suppliers of the goods and services. Shifts Supply Curve.
    - **Specific Tax** – fixed amount. Reflected by a parallel shift of SS curve.
    - **Ad valorem tax** – percentage tax. Reflected by a pivotal shift of SS curve.
- **Depending on the question:** Indirect taxes impacts on the welfare of consumers, producers and society as a whole. Explain impact on price, quantity, total revenue collected by govt, total expenditure by consumers, govt tax revenue collected, changes in consumers' and producers' surplus.
- **Direct taxes -** taxes on income and wealth and are paid to the tax authorities directly by the economic agent. Shifts demand curve.

Subsidies - cash transfer from the government to the producer or consumer.
Indirect Subsidies – Shifts Supply curve.
Direct Subsidies – Shifts Demand curve.
Expectations on Subsidies are similar to that for taxes.

Price Controls – Minimum price/ price floor and Maximum price / price ceiling

- **Minimum Price** - is a price floor, which is a legally established minimum price to prevent prices from falling below a certain level.
    - To protect producers' incomes, especially when prices are volatile
    - To create a surplus which can be stored in preparation for future shortages
- A minimum price therefore has impacts on the welfare of consumers, producers and society as a whole. Student shd be able to identify the deadweight loss in a situation whereby the govt buys up all surpluses from a guaranteed minimum price.

- **Maximum Price** – is a price ceiling, which is a legally established maximum price to prevent prices from rising above a certain level.
    - To provide a certain level of equity, especially for essential goods like staples, or housing.
    - Sometimes to prevent exploitation by monopolies in an imperfect market structure.
- A maximum price results in shortage and under-allocation of resources to the production of the good. Similarly, impacts on equilibrium price and quantity, total expenditure/revenue, consumers' and producers' surplus.
- Because of shortages that appear in the market: there is a need for alternative forms of non-price rationing. Black market or underground market economy for these goods appear and it defeats the purpose of the maximum price to ensure equity. Student shd be able to identify the problems that arise from implementation of a maximum price.

Quantity controls - refer to the setting of fixed output level by the government.

- **A quota** is a limit on the quantity produced imposed by the government through legislation and regulation – reflected as a vertical line at the level of output allowed.
- For a quota to be effective, the quantitative restriction must be set below the market equilibrium quantity

Labour Market

Households are sellers and firms are buyers in the labour market. The determinants of demand and supply of labour is different from those of goods and services. Wages are determined by the interaction of demand and supply for labour.

Labour Demand (by Firms) – wage and non-wage determinants

- Demand for final goods and services affect the demand for labour (derived demand)
- Price of final goods and service
- Productivity of labour
- Supply of alternative factors of production/complementary factors of production
- Changes in technology/method of production

Labour Supply (by households) – wage and non-wage determinants

- Immigration
- Changes in educational attainment/job qualifications
- Changes in non-wage benefits of jobs
- Changes in alternative employment opportunities

Wage differentials may be explained by various reasons, including:

- Workers are not homogenous – different skills exist between workers. PES also affects wages across different industries.
- Jobs are not homogenous – some jobs require specific skills, others do not. PED also affects wages across different industries.
- Government intervention – Minimum Wage policy/law

<u>Typical types of essay questions in Price Mechanism and Applications</u>

Policy Questions creeping in + increasingly hybrid questions!

- [2022]: The Singapore government announced in the 2018 Budget that the goods and services tax (GST) would rise from 7% to 9% sometime between 2021 and 2025. The intended consequence of this change is to raise tax revenue. However, following the coronavirus (Covid-19) outbreak in 2020, the incomes of many households fell.
  (a) With the aid of diagrams, explain why an increase in GST and a fall in the incomes of many households are each expected to cause a fall in expenditure on luxury goods. [10]
  (b) Discuss whether this increase in GST is likely to raise tax revenue and whether it will lead to unintended consequences. [15]
- [2021]: In recent years the United States (US) government has increased tariffs (import taxes) on a wide range of imported goods from China.
  (a) With the aid of a diagram, explain what is meant by consumer surplus and producer surplus. [10]
  (b) Discuss the view that all economic agents in the US economy will lose from the introduction of tariffs on imported goods from China. [15]
- [2020]: Concerns about future water shortages of water resulted in Singapore's national water agency, PUB, increasing the price of water by 30% from 2017. By 2060, Singapore's total water demand could almost double.
  (a) Explain why a shortage of water might still exist after the rise in the price of water. [10]
  (b) Discuss whether the government policy of increasing the price of water is the only effective way to overcome future water shortages. [15]