

H2 Economics Chapter 2 Notes

This document is intended as a summary of the points provided in the NJC 2024 H2 Economics Chapter 2 Seminar Notes. It is to be used as a **study guide** to provide a **structure** for studying the Chapter 2 Notes.

1 The Free Market Economy

The Free Market Economy

In Chapter 1, we studied scarcity as the central economic problem, where unlimited wants exceed limited resources, necessitating decisions on resource allocation to maximise societal welfare. We briefly touched on how rational agents weigh benefits and costs to make decisions that enhance welfare. In Chapter 2, we delve into how this process unfolds in a free market economy. Below are the features of a free market economy¹.

- **Freedom of Choice and Enterprise:** Households and firms undertake all decisions. Consumers are free to decide what to buy with their incomes (consumer sovereignty). Workers are free to choose where and how much to work. Firms are free to choose what to sell and what production methods to use.
- **Pursuit of Self-Interest:** Economic activity in the free market system is driven solely by self-interest. Each economic agent hence attempts to maximise their net private benefit. Hence, firms try to maximise profits, consumers try to maximise satisfaction and workers try to get jobs that yield as high a return as possible and governments aim to maximise societal welfare.
- **Perfect Competition:** Competition here refers primarily to price competition. This means that in the market for each commodity, there are a large number of buyers and sellers, each having an insignificant share of the market and hence having negligible influence on the market demand and supply. No single buyer or seller is influential enough to control a market and exploit other sellers or buyers.
- **Private Ownership of Property:** Households have the right to own labour, land, capital and entrepreneurship resources. Owners of factors of production thus have the right to the income (wages, rent, interest and profits respectively) earned from firms' use of these factors of production.

¹ The other types of economy are the command economy — in which the allocation of resources is entirely determined by the government — and the mixed economy — in which the allocation of resources is determined primarily by the free market, with government intervention in market failure (which will be covered in Chapter 4). The features of these economies are not necessary.

Adam Smith argued that under this set of assumptions, resources will be allocated perfectly to produce a combination of goods and services in society which maximises societal welfare. But why is this so?

The interactions between demand and supply create a 'tug-of-war' dynamic which allows resources to be allocated in a manner that corresponds to the relative magnitude of the willingness and ability of consumers to buy and the producers to sell goods and services. Below are the core functions of the price mechanism in providing for allocative efficiency².

Signalling: The price level acts as a signal to producers reflecting what is relatively scarce and what is relatively abundant. The price offered by consumers is an indication of the valuation of the goods by the consumers in preference to other goods. Hence, an increase in the equilibrium price of good A will indicate to producers that consumers' valuation of good A has increased and they are willing to see resources diverted away from the production of other goods and towards the production of good A, signalling to producers that they should allocate more resources to good A to increase their quantity supplied to meet the higher quantity demanded. The higher price also indicates to individual consumers to reduce their quantity demanded.

Incentive: Changes in price provide incentives for producers to reallocate their scarce resources. For example, when there is an increase in price of good A, profit-maximising firms are incentivised to divert their resources away from goods with a lower price relative to their cost of production towards good A with a higher price to capture the potentially higher revenue from the sale of the additional unit of goods and services, which, holding costs constant, would hence result in higher profits. Hence, more resources will be allocated to the production of a good in response to higher prices. Hence, the signalling and incentive functions of the price mechanism address **what and how much to produce**. The higher price also means consumers' purchasing power for the good has decreased, which incentivises individual consumers seeking to maximise their level of satisfaction to divert their income away from the purchase of good A which has a higher cost relative to the satisfaction it provides and towards goods which have a lower cost relative to the satisfaction they provide. Hence, quantity demanded will decrease in response to a rise in price.

² There are greyed out sections which are largely for understanding. These should not be written in answers. This is because they explain the function of the price mechanism from the consumers' point of view. However, the syllabus states it is only required to know how the price mechanism addresses the questions of what to produce, how to produce and for whom to produce. From this, the focus of the price mechanism function is on the producer side.

Rationing: Changes in price enable scarce resources to be rationed to consumers based on their willingness and ability to pay. For example, as the price is bidded up, consumers who are less willing or less able to pay will leave the market and not purchase these goods, decreasing the quantity demanded. On the other hand, profit-maximising producers are more willing and able to sell to consumers who pay the most so they enter the market and sell these goods, increasing the quantity supplied. Hence, consumers who are most willing and able to pay will offer more dollar votes to indicate that they have the greatest valuation for these goods and services, so goods are preferentially allocated to them. On the other hand, producers who are most willing and able to sell the goods will sell at a lower price, so goods are preferentially bought from them. Hence, excess demand and supply is eliminated. This addresses the question of **for whom to produce**.

The price mechanism additionally helps producers in determining the method of production based on input prices. If the price of a resource rises relative to the price of another resource, it indicates that the former resource has become more scarce relative to the other resource. Profit maximising firms would be incentivised to produce with the least cost combination of inputs by employing more of the latter resource and less of the first. Hence, this ensures that the economy produces the maximum level of output for a given level of inputs by making sure no long-lasting shortage of any input develops.³

The Equilibrium Price and Quantity

A change in demand and/or supply will result in a shortage or surplus at the original equilibrium price where quantity demanded exceeds quantity supplied or vice versa, which will result in an upward or downward pressure on equilibrium price to change, causing the equilibrium quantity to change.

Δ Demand	Δ Supply	Δ Price		Δ Quantity	
Increase	Increase	$D \uparrow > S \uparrow \Rightarrow P \uparrow$	$D \uparrow < S \uparrow \Rightarrow P \downarrow$	Increase	
Increase	Decrease	Increase		$D \uparrow > S \downarrow \Rightarrow Q \uparrow$	$D \uparrow < S \downarrow \Rightarrow Q \downarrow$
Decrease	Increase	Decrease		$D \downarrow > S \uparrow \Rightarrow Q \downarrow$	$D \downarrow < S \uparrow \Rightarrow Q \uparrow$
Decrease	Decrease	$D \downarrow > S \downarrow \Rightarrow P \downarrow$	$D \downarrow < S \downarrow \Rightarrow P \uparrow$	Increase	

³ This point is largely about productive efficiency. You should not bring this in for most questions about allocating scarce resources.

Functions of Price Mechanism incorporated into Price Mechanism Analysis

A change in demand and/or supply will result in a shortage at the original equilibrium price where quantity demanded exceeds quantity supplied. **The shortage causes an upward pressure on the price to rise** as consumers try to outbid one another for the limited quantity of good A.

This indicates that consumers' valuation of good A in preference to other goods is higher, indicating to firms that good A is relatively scarce and therefore that consumers are willing to see resources diverted away from other goods towards good A, signalling to potential producers to increase quantity supplied to meet higher quantity demanded. Profit-maximising producers will allocate more resources to good A to increase quantity supplied to capture the potentially higher revenue from the sale of the additional unit of goods and services, which, holding costs constant, would hence result in higher profits. This addresses the resource allocation question of 'what and how much to produce'. As prices rise, consumers are less willing and able to purchase good A and leave the market so quantity demanded falls, and good A is preferentially allocated to consumers who are most willing and able to purchase it, rationing good A to eliminate excess demand, hence addressing 'for whom to produce'.

OR⁴

This indicates that consumers' valuation of good A in preference to other goods is higher, signalling to potential producers to increase quantity supplied to meet higher quantity demanded. Profit-maximising producers will allocate more resources to good A to increase quantity supplied to capture the potentially higher revenue from the sale of the additional unit of goods and services, which, holding costs constant, would hence result in higher profits. This addresses the resource allocation question of 'what and how much to produce'. As prices rise, consumers are less willing and able to purchase good A and leave the market so quantity demanded falls, rationing good A to eliminate excess demand, hence addressing 'for whom to produce'.

Eventually, quantity supplied and quantity demanded become equal when **prices rise from P_0 to a new equilibrium price P_1 and equilibrium quantity rises from Q_0 to Q_1** , eliminating the shortage. Hence, the price mechanism allocates more resources to the production of goods and services when it is relatively scarce to maximise societal welfare, allowing for allocative efficiency.

⁴ Pick one of these paragraphs based on your time constraint. The incentive function must be properly explained, but the signalling and rationing function can be slightly less in depth.

2 Concept of Demand

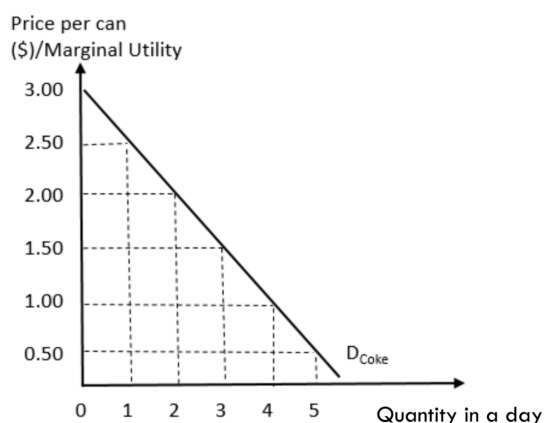
Fundamentally, the free market economy operates by the interaction between two forces of willingness and ability — demand and supply. Let us first explore the concept of demand. In every market, there are buyers who want to buy goods and services to satisfy their wants and needs, but are limited by their income, which determines their purchasing power. The sum of their willingness and ability to buy these goods and services is known as ‘Demand’.

Demand is defined as the quantity of a well-defined commodity that consumers are both willing and able to buy at each and every price during a given period of time, ceteris paribus.

The Law of Diminishing Returns/Marginal Utility states that beyond a certain point of consumption, every additional unit of a good or service consumed provides less additional utility to a consumer than the previous unit.

The Downward Slope of the Demand Curve

The law of diminishing marginal utility states the additional satisfaction a consumer gains from each successive unit of a good or service is lower than the previous unit. Hence, as a consumer consumes more and more of a good, the additional satisfaction he derives from each additional unit of the good gets less. The price a consumer is willing to pay for an additional unit of a good is determined by the additional satisfaction he derives from consuming that unit of the good. This means that the consumer equates the price he is willing to pay to the marginal utility (MU) he derives from consuming the additional unit of the good. Since the MU of a good decreases as the individual consumes more of it, the price he is willing to pay for each additional unit of the good also decreases. This is represented by the downward demand curve for the good.



The Law of Demand states that in a given time period, the quantity demanded of a product is inversely related to its price, ceteris paribus.

The T.E.N. P.I.G.S. Framework

Cause	Key Analysis/Technical Terms
<u>Tastes and Preferences</u>	Shift away from ____ Shift towards ____, Because (comparing contextualised criteria)
<u>Expectations</u>	Expected $P_{\downarrow} \Rightarrow$ Better deal in future $\Rightarrow$ Buy in Future Expected $P_{\uparrow} \Rightarrow$ Less affordable in future $\Rightarrow$ Buy Now Expected $Y_{\downarrow} \Rightarrow$ Less PP in future $\Rightarrow$ Save up for rainy days Expected $Y_{\uparrow} \Rightarrow$ Higher PP in future $\Rightarrow$ consumer confidence $\uparrow$
<u>Number of Buyers</u>	Assuming each buyer buys similar amounts of the good, ability to consume $\uparrow$
<u>Price of Related Goods</u>	Complements: jointly consumed, satisfaction $\uparrow$ because (contextualised explanation), $P_A \downarrow \Rightarrow Q_{DA} \uparrow \Rightarrow D_B \uparrow$ to fully utilise A Substitutes: consumed in place of each other for the same purpose of (contextualised purpose), $P_A \downarrow \Rightarrow Q_{DA} \uparrow \Rightarrow$ A is relatively cheaper than B $\Rightarrow D_B \downarrow$ Factor of Production: B is a FOP of A $\Rightarrow P_A \downarrow \Rightarrow Q_{DA} \uparrow \Rightarrow$ more B is required to produce more A $\Rightarrow$ derived $D_B \uparrow$
<u>Income</u>	Normal good/ Necessity/ Luxury because $Y_{\uparrow} \Rightarrow$ (contextualised explanation of why $D_{\uparrow}$) $\Rightarrow YED > 0 \Rightarrow Y_{\uparrow} \Rightarrow PP_{\uparrow} \Rightarrow D_{\uparrow} \Rightarrow$ proportionately/ more/ less than proportionately Inferior good because $Y_{\uparrow} \Rightarrow$ (contextualised explanation of why $D_{\downarrow}$) $\Rightarrow YED < 0 \Rightarrow Y_{\uparrow} \Rightarrow PP_{\uparrow} \Rightarrow$ buy B (normal) instead of A (inferior) $\Rightarrow D_A \downarrow$
<u>Government Policies</u>⁵	Tax/Subsidy $\Rightarrow \Delta$ Disposable Income $\Rightarrow PP_{\Delta}$

⁵ Quotas, Price Ceilings and Price Floors do not shift the demand curve.

3 Concept of Supply

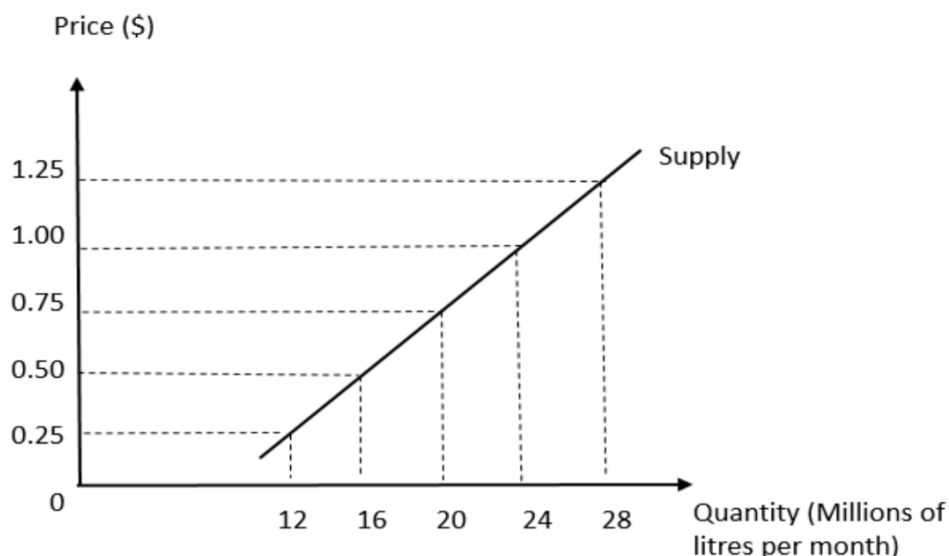
Let us now explore the concept of supply. The other party in a market are the sellers who want to sell goods and services to maximise their profits, but are limited by the cost of production. The sum of their willingness and ability to sell these goods and services is known as 'Supply'.

Supply is defined as the quantity of a well-defined commodity that producers are both willing and able to sell at each and every price during a given period of time, ceteris paribus.

The Law of Increasing Opportunity Cost states that the opportunity cost of producing an additional unit of output is greater than the previous unit — that is, the marginal cost of production increases.

The Upward Slope of the Supply Curve

The law of increasing opportunity cost states that the opportunity cost of each additional unit of a good or service produced is higher than that of the previous unit. Hence, as a producer produces more and more goods and services, the cost of production for each good or service produced increases. The minimum price at which profit-maximising producers are willing to sell a unit of good or service at is the cost of producing that particular unit i.e. the marginal cost, since this is the price where they will just break even for selling that good. Since the cost of producing each unit increases, the price at which producers are willing to sell at for each additional unit of goods and services increases, which is why the supply curve is upward sloping.



The Law of Supply states that in a given time period, the quantity supplied of a product is directly related to its price, ceteris paribus.

The T.E.N. P.I.G.S. Framework

Cause	Key Analysis/Technical Terms
Technological Advancement	New, better methods of producing goods like (contextualised example) $\Rightarrow$ Amount of output per unit input $\uparrow \Rightarrow$ COP $\downarrow \Rightarrow \pi_{\max}$ producers $\Rightarrow S \uparrow$
Expectations	Expected $P \uparrow \Rightarrow$ costs constant $\Rightarrow$ higher profit margins in future $\Rightarrow$ more profitable in future $\Rightarrow$ stock up now
Number of Sellers	Assuming each seller sells similar amounts of the good, ability to produce $\uparrow$
Price of Related Goods	Substitutes: Employ the same resources to be produced $\Rightarrow \uparrow$ production of A $\Rightarrow$ less resources $\Rightarrow \downarrow$ production of B (in competitive supply) $\Rightarrow P_A \uparrow \Rightarrow Q_{SA} \uparrow \Rightarrow \downarrow$ ability to produce B $\Rightarrow \pi_{\max}$ producers $\Rightarrow S_B \downarrow$ Complements: Simultaneously produced in a production process using the same resources $\Rightarrow \uparrow$ production of A $\Rightarrow \uparrow$ production of B $\Rightarrow P_A \uparrow \Rightarrow Q_{SA} \uparrow \Rightarrow S_B \uparrow$
Input (FOP) Prices	A is a FOP of B $\Rightarrow$ shortage $\Rightarrow P_A \uparrow \Rightarrow$ COP $\uparrow \Rightarrow \pi_{\max}$ producers $\Rightarrow \downarrow$ ability to produce $\Rightarrow S_B \downarrow$
Government Policies	Tax/Subsidy $\Rightarrow \Delta$ COP $\Rightarrow \pi_{\max}$ producers $\Rightarrow \Delta$ ability to produce $\Rightarrow \Delta S_B$ Quota at $Q_s \Rightarrow$ shortage $\Rightarrow$ upward pressure $\Rightarrow P_D > P_s \Rightarrow \pi_{\max}$ producers $\Rightarrow P \uparrow$ to P_D

4 Consumer and Producer Surplus

Consumer Surplus is the difference between how much consumers are willing to pay for a good or service and how much they actually pay.

Producer Surplus is the difference between the price that producers are willing to sell a good or service for and the price that they actually receive.

If a consumer is willing to pay \$15 for a good which in fact, he actually only paid \$10, he would be enjoying a consumer surplus of \$5 for consuming this additional unit of the good. The total consumer surplus is the sum of all the marginal consumer surplus that a consumer has obtained from all the units of a good consumed. A consumer will go on to purchase additional units as long as they gain additional consumer surplus. Hence, they will continue to consume as long as the price they are prepared to pay exceeds the price they are charged ($MU > P$). They stop consuming when $MU = P$ at output Q_0 and consumer surplus is maximised. Hence, the total consumer surplus is illustrated by the area under the demand curve but above the equilibrium price, AE_0P_0 .

If a producer is willing to sell a good for \$5 when in fact, he actually sold it for \$10, he would be enjoying a producer surplus of \$5 for producing this additional unit of the good. The total producer surplus is the sum of all the marginal producer surplus that a producer has obtained from all the units of a good produced. As the price increases, the incentive for producing the good increases, thereby increasing the producer surplus. A producer always tries to increase his producer surplus by selling more and more at higher prices. However, it is simply not possible to increase producer surplus indefinitely since at higher prices, there might be no demand for the goods. Hence, they stop producing where $MC = P$ at Q_0 . Graphically, it is shown as the area above the supply curve and below the equilibrium price. Total producer surplus (shown as area $BEPe$) is achieved at the output Q_e where the quantity supplied equals quantity demanded for a good.

Important Thing to Note

- In explaining the concepts of producer and consumer surplus, the law of diminishing marginal utility and law of increasing opportunity cost must be applied to explain the shape of the demand and supply curves. This is because these laws explain the concepts of “willingness” to pay and sell respectively.

5 Concepts of Elasticity

Let us now consider how much price and quantity may shift in response to a change in demand and supply. Elasticity is essentially the concept of responsiveness of quantity demanded or supplied to the change in one of the determinants of demand and supply.

5.1 Price Elasticity of Demand

Price Elasticity of Demand (PED) measures the degree of responsiveness of the quantity demanded of a good to a change in its price, ceteris paribus.

PED Value	Interpretation
$ \text{PED} < 1$	Demand is price inelastic and is illustrated by a curve which has a steeper gradient since quantity demanded will change less than proportionately to a change in price.
$ \text{PED} > 1$	Demand is price elastic and is illustrated by a curve which has a gentler gradient since quantity demanded will change more than proportionately to a change in price.
$ \text{PED} = 1$	Demand is unitary price elastic and is illustrated by a rectangular hyperbola curve because the percentage change in quantity demanded is the same as the percentage change in price.
$ \text{PED} = 0$	Demand is perfectly price inelastic and is illustrated by a vertical line since quantity demanded does not change with a change in price.
$ \text{PED} = \infty$	Demand is perfectly price elastic and is illustrated by a horizontal line since quantity demanded changes infinitely with an infinitesimal change in price.

P.E.D. changes over Time Framework

Cause	Key Analysis/Technical Terms
<u>Proportion of Income</u>	Proportion of income $\uparrow \Rightarrow$ For a percentage change in price $\Rightarrow$ larger absolute change in price $\Rightarrow \text{PED} > 1$

<u>Existence & Closeness of Substitutes</u>	Availability $\uparrow \Rightarrow$ ease of obtaining substitutes $\Rightarrow PED > 1$ Closeness $\uparrow \Rightarrow$ greater similarity in (contextualised purpose of good) $\Rightarrow PED > 1$
<u>Degree of Necessity</u>	Degree of necessity $\uparrow \Rightarrow$ (contextualised explanation) $\Rightarrow$ dependence on good $\uparrow \Rightarrow PED > 1$
<u>Time Period</u>	Habits take significant time to change $\Rightarrow$ decrease in dependence over time $\Rightarrow PED > 1$ As time passes, more firms enter a market $\Rightarrow$ increase in availability of substitutes $\Rightarrow PED > 1$ Consumer durables $\Rightarrow$ will not quickly wear out $\Rightarrow$ no immediate need to increase quantity demanded for good $\Rightarrow$ longer time to respond to changes in price $\Rightarrow PED > 1$

Exemplar revenue analysis for change in supply⁶

Since $|PED| < 1$, When the price increases, the increase in revenue caused by a more than proportionate increase in price, illustrated by area $P_1E_1AP_0$ exceeds the fall in revenue caused by the decrease in quantity, illustrated by area $AE_0Q_0Q_1$. Hence, there is a net increase in revenue, given by the product of price and quantity.

5.2 Price Elasticity of Supply

Price Elasticity of Supply (PES) measures the degree of responsiveness of quantity supplied of a good to changes in its price, ceteris paribus.

PES Value	Interpretation
PES < 1	Supply is price inelastic and is illustrated by a straight line through the quantity axis since quantity supplied will change less than proportionately to a change in price.

⁶ Learn to adapt this phrasing accordingly to other contexts.

PES > 1	Supply is price elastic and is illustrated by a straight line through the price axis since quantity supplied will change more than proportionately to a change in price.
PES = 1	Supply is unitary price elastic and is illustrated by a straight line through the origin because the change in quantity supplied is proportional to the change in price.
PES = 0	Supply is perfectly price inelastic and is illustrated by a vertical line since quantity supplied does not change with a change in price.
PES = ∞	Supply is perfectly price elastic and is illustrated by a horizontal line since quantity supplied changes infinitely in response to a small change in price.

P.E.S. Changes over Time Framework

Cause	Key Analysis/Technical Terms
<u>Proportion of marginal cost change relative to output changes</u>	Proportion of marginal COP changes to output changes $\uparrow \Rightarrow$ cost per additional unit of output $\uparrow \Rightarrow$ difference between price & COP $\uparrow \Rightarrow$ incentive to produce more per unit increase in price $\downarrow \Rightarrow$ PES < 1
<u>Existence of Spare Capacity</u>	Spare capacity $\uparrow \Rightarrow$ Resources available $\uparrow \Rightarrow$ eliminates time to obtain resources like delivery time ⁷ $\Rightarrow$ quickly employ unused resources $\Rightarrow$ ease of increasing output for $\pi_{\max}$ producers to capture market share $\uparrow \Rightarrow$ PES > 1
<u>Stock Availability and Durability</u>	(Durability $\uparrow \Rightarrow$ store cheaply without loss in quality) $\Rightarrow$ Availability $\uparrow \Rightarrow$ eliminates time to obtain resources and produce goods and services ⁸ $\Rightarrow$ ease of restocking $\Rightarrow$ PES > 1
<u>Time Period</u>	Momentary Period: All factors of production are fixed $\Rightarrow$ unable to increase output in response to a change in price $\Rightarrow$ PES = 0

⁷ Factor Mobility is another factor that affects PES. It can be explained using this chain of analysis.

⁸ Length of production period is another factor that affects PES. It can be explained using this chain of analysis.

	Short Run: At least one factor of production is fixed $\Rightarrow$ quantity of some inputs (labour and some capital only) can be changed to respond slowly to a change in price but some cannot $\Rightarrow$ PES < 1 Long Run: No factors of production $\Rightarrow$ quantity of all inputs can be changed to respond quickly to a change in price $\Rightarrow$ PES > 1
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5.3 Income Elasticity of Demand

Income Elasticity of Demand (YED) measures the degree of responsiveness of demand of a good to a change in income, ceteris paribus.

YED Value	Interpretation
YED < 0	Good is an inferior good since an increase in income results in a fall in demand as consumers tend ⁹ switch to what they feel is a superior option.
0 < YED < 1	Good is income inelastic and is a necessity ¹⁰ good since an increase in income results in proportionately smaller increase in demand.
YED > 1	Good is income elastic and is a luxury good since an increase in income results in proportionately larger increase in demand

Y.E.L.I. Framework

Cause	Key Analysis/Technical Terms
<u>Y</u> (income) level	Y level $\uparrow$ $\Rightarrow$ PP $\uparrow$ $\Rightarrow$ Basic wants and needs satisfied $\Rightarrow$ Perception of essential, necessity and luxury goods $\Rightarrow$ YED $\downarrow$
<u>Essentials</u> (Necessity Good)	Staple/essential/fundamental/needed to satisfy basic wants and needs $\Rightarrow$ regardless of income level, amount bought similar $\Rightarrow$ YED < 1

⁹ It is very important to note that consumers switch to what they feel is a superior option. The product may not always be superior in quality. Hence, the definition of an inferior good is based on the change in demand in response to a change in income, and not the quality of the good.

¹⁰ Necessity goods are essentials. This is not the same as the concept of 'degree of necessity', which reflects the dependence on a particular good.

<u>Luxury Good</u>	More Premium/Extravagant $Y \uparrow \Rightarrow$ spend on non-essential items to enhance their lifestyle or status $\Rightarrow YED > 1$ $Y \downarrow \Rightarrow$ Consumer confidence $\downarrow \Rightarrow$ Save up for rainy days $\Rightarrow$ prioritise essential items, reducing their spending on high-end products
<u>Inferior Good</u>	(Contextualised comparison of the normal good and inferior good e.g. value-for-money, good deal, bargain) $Y \uparrow \Rightarrow$ spend on superior items to enhance their lifestyle or status $\Rightarrow YED < 0$ $Y \downarrow \Rightarrow$ Consumer confidence $\downarrow \Rightarrow$ Save up for rainy days $\Rightarrow$ prioritise essential items, reducing their spending on high-end products

Important Thing to Note

If income is expected to increase in the future, a similar change in demand will occur, and vice versa if income is expected to decrease in the future. Hence, analysis using YED would still apply for expectation of income changes.

5.4 Cross Elasticity of Demand

Cross Elasticity of Demand (XED) measures the degree of responsiveness of demand of one good (good A) to a change in the price of another good (good B), ceteris paribus.

XED Value	Interpretation
$XED < -1$	Good is a close complement in consumption to B since an increase in the price of good B results in a proportionately larger decrease in demand of A.
$-1 < XED < 0$	Good is not a close complement in consumption to B since an increase in the price of good B results in a proportionately small decrease in demand of A.
$0 < XED < 1$	Good is not a close substitute in consumption to B since an increase in the price of good B results in a proportionately smaller increase in quantity demanded of A.

XED > 1	Good is a close substitute in consumption to B since an increase in the price of good B results in a proportionately smaller increase in quantity demanded of A.
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Cause	Key Analysis/Technical Terms
<u>C</u>loseness of Substitutes	(Contextualised explanation of closeness↑ based on purpose and features of either good) ⇒ ease of switching↑ ⇒ XED > 1
<u>C</u>loseness of Complements	(Contextualised explanation of closeness↑ based on enhanced satisfaction in joint consumption) ⇒ XED < - 1

6 Application to the Labour Market

In the labour market, the 'price' of labour is known as the *wage rate* and the quantity of labour transacted is known as *labour hours* or *number of workers*¹¹

Consumers of labour are firms, which are profit-maximiser, unlike traditional consumers which only wish to maximise their satisfaction. Households have ownership of labour as a factor of production and are technically the 'producers' of labour, though it is important to note that there is not exactly a production process involved, so it would be more accurate to term them as sellers of labour. Workers (households which provide labour) aim to maximise the net benefits they gain from working.

The downward slope of the demand curve is explained by the law of diminishing marginal utility. This is because each successive unit of labour consumed provides less additional output than the previous unit. This could be due to reasons like overcrowding in the work space, issues with communication and other reasons which could reduce the productivity of labour. Hence, the price that firms are willing to pay for labour decreases with every successive unit.

The upward slope of the supply curve is explained by the law of increasing opportunity cost. Each successive unit of manpower hours provided has a higher opportunity cost than the previous unit. For example, for every unit of manpower hour used, there is less and less time for leisure. Hence, the price that households are willing to sell labour for increases with every successive unit.

- Evaluation: However, there is theoretically an increasingly steep gradient for the labour supply curve. This is because as individuals earn higher wages, they may reach a point where they can achieve their desired level of income while working fewer hours. Hence, some labour might actually become less willing and able to sell labour if prices rise too high.

Classification of Labour: Local vs Foreign, High-skilled vs Low-skilled, Educated vs Uneducated, Trained vs Untrained, By age, by gender.

¹¹ Take note of this measurement. Labour is not the output produced per unit manpower hour. It is the human effort that is provided by workers. Therefore, when productivity of labour increases, it is not the supply of labour that increases, but rather the demand, because every unit of labour (in manpower hours) provides the firms with a greater level of output at the same price, *ceteris paribus*, i.e. before price changes.

The determinants of labour demand and supply are effectively the determinants of market demand and supply.

Demand for Goods	Demand for Labour
Tastes and Preference	Productivity of Labour (output per unit input) This is the main determinant of labour demand Nature of Good (least cost combination of inputs)
Expectations of Price and Income	Expectations of Wages and Profits
Number of Buyers	Number of Firms
Price of Related Goods	Price of substitutes in consumption of labour (capital, labour saving technology, etc.) Price of complements in consumption of labour (labour-enhancing technology, etc.) Derived Demand (literally any good)
Income	Profits/ Revenue. This is essentially derived demand because profits/ revenue only increase when demand increases.
Government Policy	Minimum wage, Foreign worker quota, etc,
Supply for Goods	Supply for Labour
Technological Changes	Technological Changes: e.g. work from home
Expectations	Expectations of Wages and Work Conditions
Number of Sellers	Demographic Changes
Price of Related Goods	Opportunity Cost of Working
Input Prices	
Government Policy	Minimum Wage, Flexi Work

Likewise, the determinants of price elasticity of labour demand and supply is only somewhat the same as the determinants of price elasticity of market demand and supply.

Price Elasticity of Demand for Goods	Price Elasticity of Demand for Labour
Proportion of Income	Proportion of Cost of Production.
Existence and Closeness of Substitutes	Existence and Closeness of other factors of production like capital.
Degree of Necessity	
Time Period	As time progresses, labour becomes more skilled as the government enforces all sorts of labour training policies to reduce structural unemployment, which hence increases labour productivity.
—	* Price Elasticity of the Good: Suppose a good is price elastic. If wages increase, firms will pass on higher costs of production in terms of higher prices. This will result in a more than proportionate fall in quantity demanded of goods and services, resulting in a more than proportionate fall in labour quantity demanded.
Supply for Goods	Supply for Labour
Factor Mobility	Labour mobility (geographical and occupational)
Production Period	Time taken to train labour
Stock, Existence of Spare Capacity, Proportion of Marginal Cost, Time Period	—