

Econ-Hub **Rapid Revision Classes**

Market Economics

Elasticity of Demand Analysis

Unit [2] - BOOK [2]
Theory Recap Material [TRM]

2027 A/L Edition





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Theory Recap Material [TRM]
[Input for Special Practice Questions: SPQs]

Essentials **03**

Distinguishing ‘Law of Demand’ and ‘Price Elasticity of Demand’

Law of demand states that at given point of time, when other factors affecting (i.e., non-price factors) the demand of a given product remain constant, a change in the product’s own price leads to a negative or indirect change in quantity demanded.

The law of demand is created in principle, due to the impact a change in price has on a product’s quantity demanded, which is known as price effect. The price effect operates through two sub-effects namely, substitution and income effect.

Price Elasticity of Demand (PED) measures the relative responsiveness of a given product’s quantity demanded to a change in the given product’s price, while factors other than price affecting demand of the product remain constant.

PED is estimated by dividing the percentage change in quantity demanded of a given product by the percentage (or proportionate) change in the price of the product. The estimation can be expressed as follows:

$$\text{PED} = \frac{\text{Percentage Change in Quantity demanded}}{\text{Percentage Change in Price}}$$

The price elasticity of demand coefficient tends to be a negative value, indicating the law of demand, while the coefficient value. The coefficient may range from Zero to reach infinity.

Also Known As [AKA]: Own Price Elasticity of Demand

Also, Relevant [1]:

Elasticity [General Concept]: is an indicator that measures the proportionate sensitivity or responsiveness of a **dependent variable** to a change in an **independent variable**, when said variables are functionally related.

$$\text{Elasticity [E]} = \frac{\text{Percentage Change in Dependent Variable}}{\text{Percentage Change in Independent Variable}}$$

[TRQ: 1] The following schedule provides basic data on the demand for Limes in a competitive market, estimate the price elasticity of demand when price changes from Rs. 10 to 12, and briefly interpret your finding.

[04 marks]

Price (Rs.)	Quantity Demanded [Qd]
10.00	100
12.00	60

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Range of Price Elasticity of Demand (PED) scenarios (or Types)

[Outlined based on the **PED Coefficient** values]

[illegible]

Distinguishing ‘Point’ and ‘Arc’ Price Elasticity of Demand (PED)

Point PED:

- An alternative method of estimating Price Elasticity of Demand (PED)
- **Specifically used** when the change in price and quantity is **minute**, or a **point position change**.
- The **proportionate** (or percentage) **changes in quantity demanded (Qd) and price (P)** is derived using the **original quantity and price as the basis**.
- The use of this method **essentially** results in measuring price elasticity **at a specific point or price** of the product’s demand schedule or curve.
- Point PED coefficient is derived using the following standard formula:

$$\text{Point PED} = \frac{\Delta Q_d}{\Delta P} \times \frac{P}{Q_d}$$

- Arc PED is another alternative method of estimating Price Elasticity of Demand (PED)
- **Specifically**, when the change in price and quantity is **considerably large** or spread or a large range **beyond a point position change**.
- The **proportionate change in quantity demanded (Qd) and price (P)** is derived **using the mean (average)** of the **original and subsequent** (or later) of **quantities and prices as the basis**.
- The use of this method **essentially** results in measuring price elasticity **between two points or prices** of the demand schedule or curve.
- Arc PED coefficient is derived using the following standard formula:

$$\text{Arc PED} = \frac{\Delta Q_d}{\Delta P} \times \frac{P_1 + P_2}{Q_1 + Q_2}$$

AKA: Midpoint Method of PED

[TRQ: 2] The following schedule is pertaining to given product:

Price (Rs.)	Quantity Demanded [Qd]
05.00	100
15.00	60

- (A) Estimate the PED at the price of Rs.5
 (B) Estimate the PED between the prices of Rs.5 and Rs.15

[illegible]

[TRQ: 3] Explain in Brief the behavior of price elasticity of demand along a downward sloping linear demand curve, from left to right.

[illegible]

- At the higher or upper price range of a demand curve [top left region], the overall point PED coefficient value becomes a higher value (i.e. elastic), since price is high, and quantity is low when moving downwards along the curve in this range.
- At the lower or bottom price range of a demand curve [bottom right region], the overall point PED coefficient value becomes a lower value (i.e. inelastic), since price is low, and quantity is high when moving downwards along the curve in this range.

[TRQ: 4] If the demand equation for a given product is represented by $[Q_d = 120 - 2P]$, estimate the **price elasticity of demand** at the **price of Rs 10**

[TRQ: 5] If the demand equation for a given product is represented by **$P = 80 - 0.5Q_d$** , estimate the **price elasticity of demand** at the **price of Rs 30**

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[TRQ: 6] State the specific situations in which the price elasticity of demand coefficient is consistent along the entire demand curve (or function)

[illegible]

Price, PED & Consumer Outlay (Total Revenue)

[Practical applications of PED]

- Consumer outlay or expenditure (essentially, the total sales revenue: TR) refers to the total expenditure consumers are willing to incur on a given quantity of a given product at a given price.
- The outlay consumers plan to incur on a certain product in turn is the income or revenue the producers of the product can expect to earn through sales. The amount of the consumer outlay or total revenue (TR) is quantity demanded multiplied by the relevant price per unit of the product:

$$\begin{aligned} \text{Total Revenue (Consumer Outlay)} &= \text{Price} \times \text{Quantity Demanded} \\ \text{TR (TCO)} &= P \times Q_d \end{aligned}$$

Relationships:

[Between: ΔP and $\Delta TR \leftarrow PED$]

Applicable Concepts:

- ✓ LoD
- ✓ PED

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Determinants of Price Elasticity of Demand (PED)

- The abundance of substitute goods
 - The percentage of consumers' income spent on the product
 - The nature of the product under consideration, in terms of luxury good or necessity
 - The time lapsed (passed) after a change in price
 - The definition of the product (The coverage of the definition, in terms of broad or narrow)
 - The number of uses or utilities of the product
-

'Income Elasticity of Demand (YED)'

Income Elasticity of Demand [YED] measures the responsiveness of a given product's demand (quantity demanded) to a change in consumers' income, while other factors affecting demand of the product remain constant.

YED is estimated by dividing the percentage change in quantity demanded of a given product to a proportionate change in consumer income. The estimation can be expressed as follows:

$$\text{YED} = \frac{\text{Percentage Change in Quantity demanded}}{\text{Percentage Change in Income}}$$

[TRQ: 7] The following schedule is pertaining to product (X), estimate the YED when Income changes, from Rs.10,000 to Rs.8,000

Income [Y]	Qdx
10,000	100
8,000	80

Implications of YED Coefficient

[Interpreting YED – Nature of Product]

‘Cross Price Elasticity of Demand (CPED/XED)’

Cross Elasticity of Demand [XED] measures the responsiveness of demand (quantity demanded) of a given product to a change in the price of another product, other factors affecting demand are held constant.

XED or CPED is estimated by dividing the percentage change quantity demanded of a given product [Qdx] by the percentage change in the price of another product [Py]. This estimation can be expressed as follows:

$$\text{XED} = \frac{\text{Percentage Change in Quantity demanded [Qdx]}}{\text{Percentage Change in Price [Py]}}$$

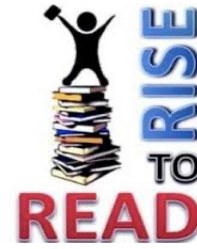
[TRQ: 8] The following schedule is pertaining to product (X) and (Y), estimate the XED when price of (Y) changes, from Rs.10 to Rs.8

Price [Py]	Qdx
10	100
8	60

Implications of YED Coefficient

[Interpreting YED – Nature of Product]

Special - Theory Recap Questions [STRQs]: SPECIAL DESIGNED for FURTHER learning & clarifications



STRQ [12]

- (A) What is meant by the 'General Concept of Elasticity'
(B) Briefly describe the concept of 'Elasticity of Demand'

(02 marks each)

- (A) Elasticity is an indicator that measures the sensitivity or responsiveness of a dependent variable to a change in an independent variable, when said variables are functionally related. Elasticity is calculated by dividing the percentage change in the dependent variable with the percentage change in the independent variable.

Elasticity is a general concept that can be used in measuring the responsiveness of variables in any functional relationship. The formula to estimate elasticity can be presented as follows.

$$\text{Elasticity [E]} = \frac{\text{Percentage Change in Dependent Variable}}{\text{Percentage Change in Independent Variable}}$$

- (B) The quantity demanded of a good is affected by changes in the price of the good, changes in price of other goods, changes in income, and changes in other relevant factors. Elasticity of demand [ED] in general refers to a measure of the responsiveness of quantity demanded (i.e. to what extent quantity demanded will be affected) by a change in price, price of other goods and income etc.

In considering variables affecting demand for a coherent (ED) analysis, it is important, said variable is significant in its impact on the product's (Qd), while changes in the given variable is accurately quantifiable [since, elasticity is mathematical measure]

Different elasticities of demand measure the proportionate response of quantity demanded to a proportionate change in the aforementioned variables (significant and quantifiable variables) which affect demand. The main types of elasticities of demand considered in the study of economics:

- Price Elasticity of Demand [PED]
[Own Price Elasticity of Demand]
- Income Elasticity of Demand [YED]
- Cross Elasticity of Demand [XED]

STRQ [13]

- (A) Explain the concept of 'Price Elasticity of Demand'
- (B) State and illustrate the 'main **types**' of price elasticity of demand situations

(03 marks each)

- (A) This is a mathematical measure of the proportionate responsiveness (**percentage change**) or sensitivity of **quantity demanded [Qd]** of a given product to a **percentage change** in the **price [P]** of the product, **when other factors [Non-price factors] affecting demand of the product remain constant.**

In simple terms what will be the **percentage change in quantity demanded (%ΔQd)** of a certain product when the price of the product is subject to change, i.e., if the price of the product increases or decreases, by a certain **percentage (%ΔP)**. Price elasticity of demand can be calculated using the following general formula.

General Formula

$$\text{PED} = \frac{\text{Percentage Change in Quantity demanded}}{\text{Percentage Change in Price}}$$

$$\text{PED} = \frac{\% \Delta Qd}{\% \Delta P}$$

Illustration

Price [(P) in Rs.]	Quantity Demanded [Qd]
10	100
12	60

$$\begin{aligned} \text{PED} &= \frac{\% \Delta Qd}{\% \Delta P} \\ &= \frac{-40\%}{20\%} \\ &= \underline{\underline{-2}} \end{aligned}$$

Interpretation:

If (P) changes by a certain percent; (Qd) will change indirectly; twice as much.



Workings

% ΔP	=	$\Delta P / P_0 \times 100$	% ΔQd	=	$\Delta Qd / Qd_0 \times 100$
	=	$2 / 10 \times 100$		=	$- 40 / 100 \times 100$
	=	<u>20%</u>		=	<u>-40%</u>

FURTHER DISCUSSION**COEFFICIENT OF PRICE ELASTICITY OF DEMAND**

The answer obtained from the formula of price elasticity of demand is known as price elasticity of demand coefficient. Based on the responsiveness of quantity demanded of a product to a change in price, the coefficient value can **range** from **Zero (0)** to **Infinity (∞)**.

The price elasticity of demand coefficient value essentially takes a negative value, implying the inverse or indirect relationship between price and quantity demanded of a certain product (i.e. law of demand). Therefore, with regards to normal and standard inferior goods essentially, either the denominator (lower component) or the numerator (top component) of the PED formula always is a negative/minus value.

Generally, economist find it convenient to omit the minus or negative sign in price elasticity of demand because it is easier to deal in positive values, while accepting PED coefficient values are in reality negative.

Part – (B)**Range of Coefficients**

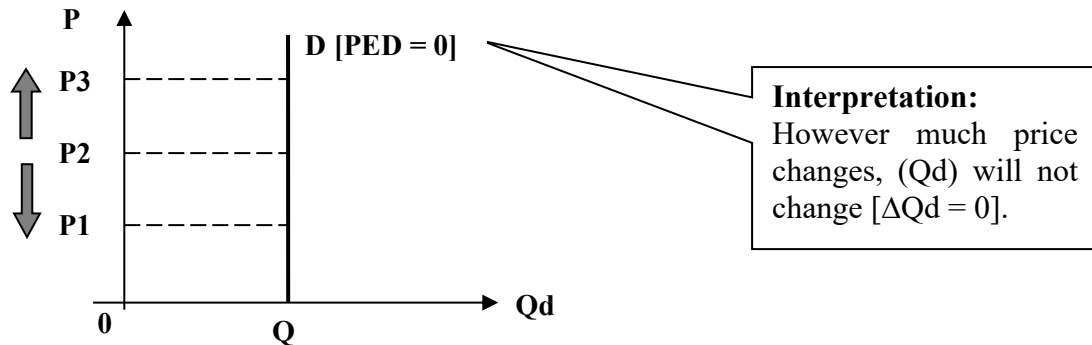
Main types of price elasticity of demand situations

Formula	PED Coefficient	Term/Type of Price Elasticity of Demand
%ΔQd = 0	PED = 0	Perfectly Inelastic Demand
%ΔQd < %ΔP	PED < 1	Relatively Inelastic Demand
%ΔQd = %ΔP	PED = 1	Unitary Elastic Demand
%ΔQd > %ΔP	PED > 1	Relatively Elastic Demand
%ΔP = 0	PED → ∞	Perfectly Elastic Demand

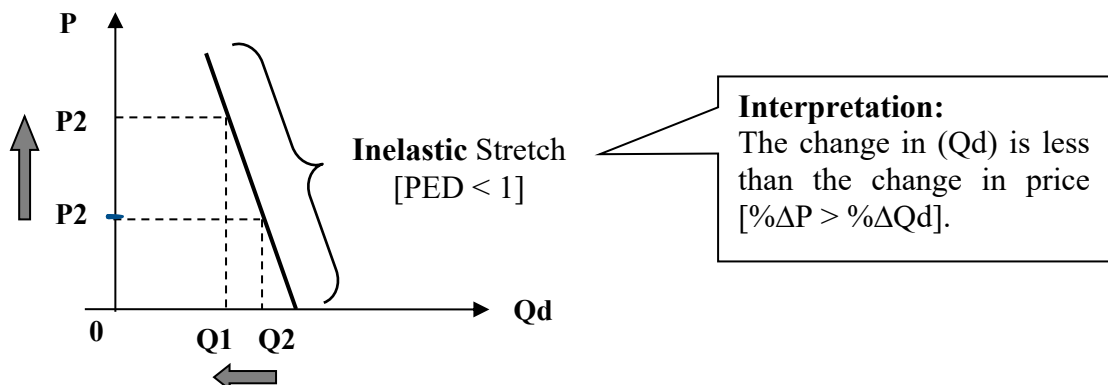
Elasticity & Demand Curves

Presenting demand curves based on PED – coefficients

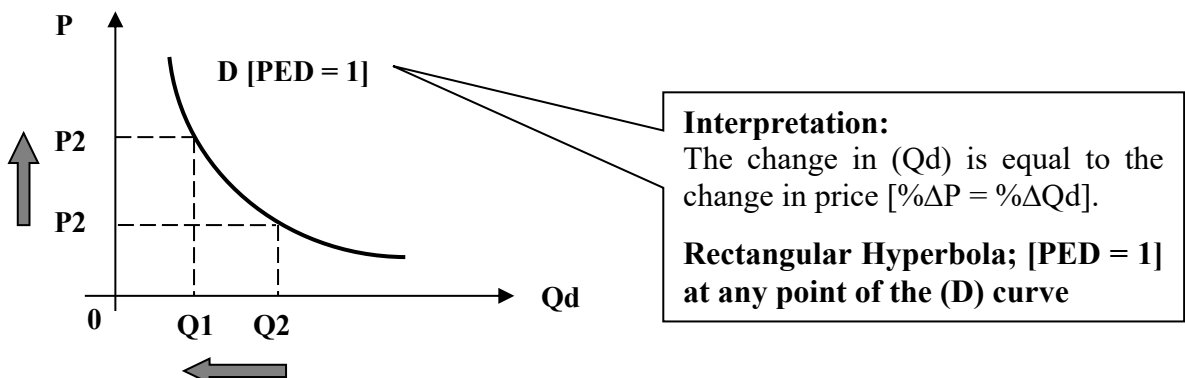
(01) Perfectly Inelastic Demand Curve

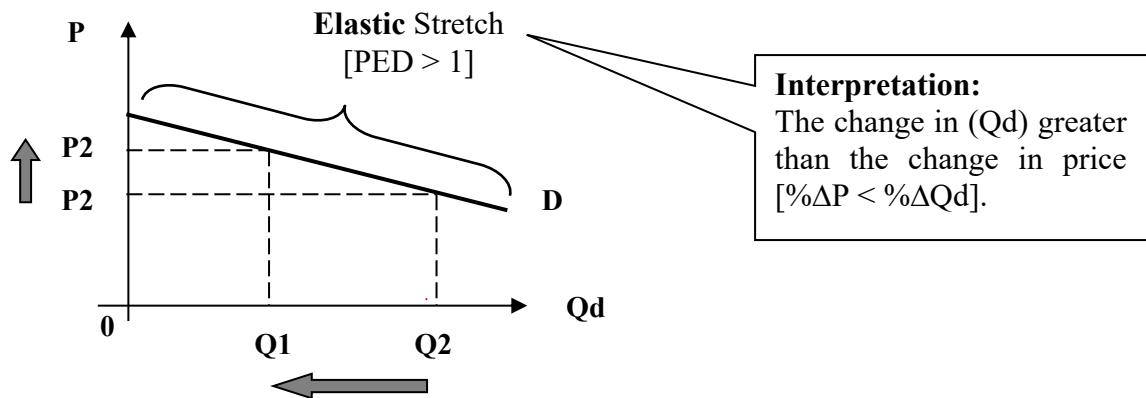
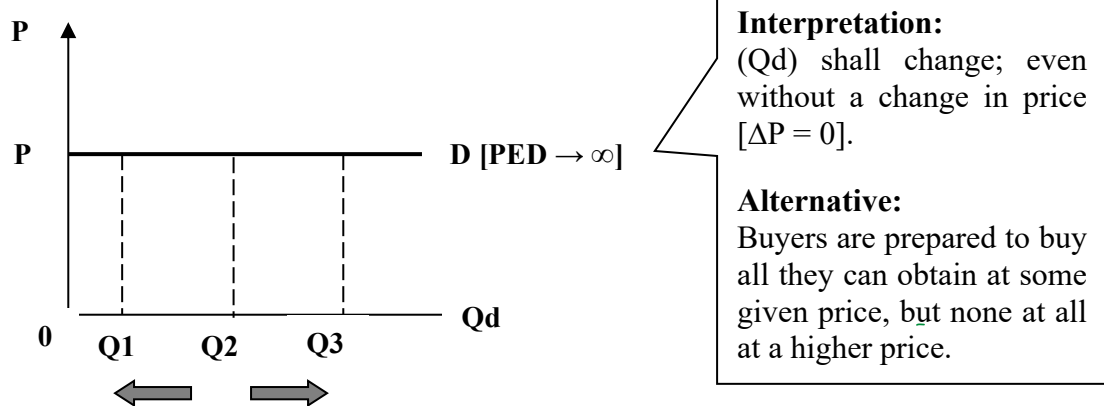


(02) Relatively Inelastic Demand



(03) Unitary Elastic Demand Curve



(04) Relatively Elastic Demand**(05) Perfectly Elastic Demand Curve**

INTRODUCTORY DISCUSSION

Alternative Formulae (Approaches) to estimate PED

Price elasticity of demand relevant to a certain product can be estimated using several different estimation approaches, such as at a **specific price** or **average basis**. These methods are at times known as concepts of price elasticity of demand. Economists use these different methods or concepts based on requirements or considerations such as, the **scale in which price and quantity changes** or the **area of the demand curve** that price elasticity needs to be measured.

The main methods of calculation can be identified as '**Point PED**' and '**Arc PED**'. It is important to understand, whichever the approach used to estimate PED, the **principle of price elasticity, remains the same** [proportionate response of Qd to proportionate change in price].

STRQ [14]

- (A) Explain the concept and use of '**Point Price Elasticity of Demand**' [Point PED]
- (B) What are the **limitations** of Point PED
- (C) What is meant by '**Arc Price Elasticity of Demand**' [Arc PED]

(03 marks each)

- (A) Point elasticity of demand is a method used to measure the responsiveness of demand (Qd) of a particular product to a **small** or **minute** change in the price (P) of that product. The concept of point elasticity of demand calculates the responsiveness of demand to a given change in price of a certain product **at a specific point** of consumption on the demand schedule or curve.

This method of estimating elasticity is only used to measure a point to point [**point position change**] within a demand schedule or curve and is **not** suitable to measure elasticity for a percentage change in price which takes place over a range of prices **beyond a point position change**.

$$\text{Point PED} = \frac{\Delta Q_d}{\Delta P} \times \frac{P}{Q_d}$$

In the above formula, the first component (on the left) is the slope of the demand equation (format: $Q_d = a - bP$) or the '**Reciprocal of the Slope or Gradient**' of a **traditional demand curve**.

In the second component on the right, (P) refers to the specific price at which elasticity is being estimated at, and (Qd) is the quantity of demand corresponding to the specific price [i.e., the **price quantity coordinates** relevant to the given point on the demand curve or schedule] or the whole component on the right, is termed as the '**Price: Quantity Ratio**'.

FURTHER READING

The first and essential component of any price elasticity of demand equation is the change in quantity divided by change in price, which represents the concept of price elasticity. This component is also known as the **slope or gradient** of the **demand equation** (format: $Q_d = a - bP$) or **reciprocal of the slope of the demand curve** (i.e., **traditional**, or **typical** demand curve) or **price coefficient**.

As stated earlier change in quantity demanded (ΔQ_d) divided by change in price (ΔP) which is the first component of the above formula represents the **slope** of '**mathematical demand curve**', where quantity demanded is represented in the (Y) or **vertical axis** as the **dependent** variable and the price is represented in (X) or **horizontal axis** as the **independent** variable, i.e., based on ($Q_d = a - bP$) format, based on the mathematical common equation for a straight-line (linear) demand curve ($Y = a + bx$). This value is **constant** at **any point** of a **straight-line demand curve**.

In the second component of the above formula (P) is the price at which elasticity is calculated and (Q) is the quantity demand applicable for that price. Accordingly, the **slope of the demand equation** (format: $Q_d = a - bP$), multiplied by the **price** and **quantity ratio** [P/Q] will result in the calculation of price elasticity of demand for that particular point of consumption on a demand curve.

Traditionally in economics, the **demand curve** is constructed to represent price in the (Y) or vertical axis and the quantity demanded in the (X) or horizontal axis in line with the equation ($P = a - bP$), where the slope or (b) component in the equation is change in price (ΔP) divided by change in quantity demanded (ΔQ_d). But the first component of any price elasticity estimation formula is ($\Delta Q_d / \Delta P$), therefore if the equation is presented in the ($P = a - bP$) format we shall **either** convert the equation to the ($Q_d = a - bP$) format **OR** apply the reciprocal of the slope in the PED estimation ($1/-b$).

Ensure to read these **illustrative notes** at least ☐

PRICE ELASTICITY, LINEAR DEMAND CURVES & DEMAND EQUATION

(01) SLOPE OF THE DEMAND CURVE AND PRICE ELASTICITY

It is a very common misconception in the study of elasticity in economics, to identify the slope of a linear demand curve and price elasticity of demand to mean the same or to be two similar concepts. In contrast the reality is that the slope (or reciprocal of slope) of a straight-line demand curve and price elasticity of demand are two clearly different or separate concepts. The price elasticity of demand of a given product **cannot** be estimated by only using the value of the reciprocal of slope of the typical demand curve. This disparity or difference between slope and elasticity can be clearly explained by observing the formula for point PED.

$$\text{Point PED} = \frac{\Delta Q_d}{\Delta P} \times \frac{P}{Q_d}$$

As discussed before, the first component of the above elasticity formula represents the ratio between the change in quantity demanded and change in price or the reciprocal of the slope of a given product's demand curve (price coefficient). The second component of the formula shows the price and quantity ratio at the given point or the price and quantity at which elasticity needs to be measured. Accordingly in order to calculate or estimate price elasticity of demand the value of the reciprocal of the slope of the demand curve has to be multiplied by the price and quantity ratio at that point.

This situation also explains why the point elasticity of demand coefficient varies at different points of a linear or straight line demand curve. **In conclusion it can be identified that in the process of estimating price elasticity the reciprocal of the slope (or slope) of the demand curve is important, but the slope alone does not represent price elasticity of a given point.**

(02) LINEAR DEMAND CURVE AND (PED) COEFFICIENT

With regards to a linear demand curve as presented below, the first component of the point PED formula, i.e., the reciprocal of the slope of the demand curve tends to be constant at any point of the demand curve. **Although the value of the slope (reciprocal of slope) is constant, the point PED coefficient value tends to change from one point to another along a linear demand curve.**

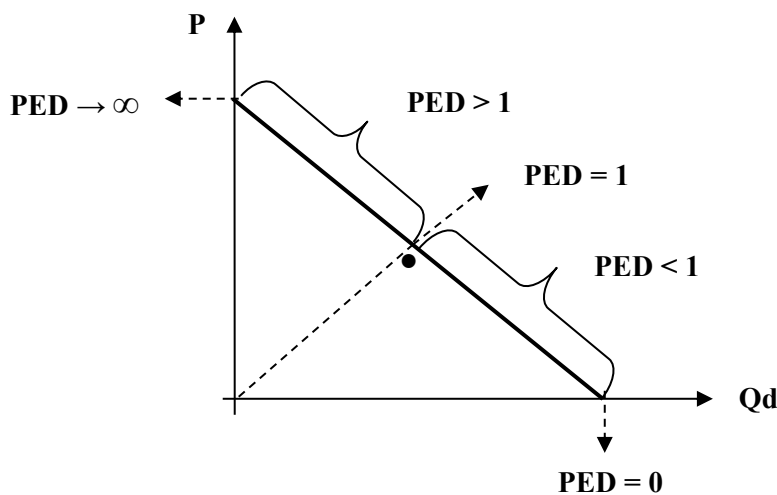
This is because the price: quantity ratio or the second component [component on the right] of the point price elasticity of demand formula tends to change or vary along the curve even though the reciprocal of the slope value (first component or component on the left) remains constant.

Accordingly, the **Point PED coefficient value** will **gradually decrease** when **moving downwards from left to right along a traditional linear demand curve**.

Principal Reasons:

- At the higher or upper price range of a demand curve [top left region], the overall point PED coefficient value becomes a higher value (i.e., elastic), since price is high, and quantity is low when moving downwards along the curve in this range.
- At the lower or bottom price range of a demand curve [bottom right region], the overall point PED coefficient value becomes a lower value (i.e. inelastic), since price is low and quantity is high when moving downwards along the curve in this range.

How the elasticity and the magnitude of the Point PED coefficient changes when moving along a standard downward sloping linear demand curve is illustrated in the following diagram.



(03) DEMAND EQUATION AND PRICE ELASTICITY

The demand function or equation relevant for a linear demand curve can be used to derive the point price elasticity of a given product. In order to calculate elasticity based on the point price elasticity of demand formula only two important pieces of information is required namely,

- $[\Delta Q_d \div \Delta P]$ or Reciprocal of the Slope of the traditional demand curve
- Price and quantity ratio at the given point on the demand curve

Accordingly price elasticity can be calculated using the demand equation, since the standard demand equation relevant for a linear demand curve is able to provide the above information. It is also important to remember that in a straight line demand curve the value of the slope is constant at any given point of the demand curve.

ILLUSTRATION

Assume that the demand function relevant for product (A) is $Q_d = 60 - 2P$. Estimate the price elasticity of demand at the price of Rs. **10.00**.

Working	$P = 10$ $Q_d = 60 - 2P$ $= 60 - (2 \times 10)$ $= \underline{40}$
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$$\begin{aligned}
 \text{Point PED} &= \frac{\Delta Q_d}{\Delta P} \times \frac{P}{Q_d} \\
 &= -2^* \times \frac{10}{40} \\
 &= \underline{\underline{-0.5}}
 \end{aligned}$$

* Since the equation is in the format of $[Q_d = a - bP]$, the slope or the (b) component i.e. (- 2) can be directly applied as the first component of the Point PED formula.

Assume that the demand function relevant for product (X) is $P = 40 - 0.25Q_d$. Estimate the price elasticity of demand at the price of Rs. **15.00** and the quantity of **100** units.

Option – I

Conversion: $[P = a - bQ_d]$ to $[Q_d = a - bP]$		
P	$=$	$40 - 0.25 Q_d$
$\frac{0.25Q_d}{0.25}$	$=$	$\frac{40}{0.25} - \frac{P}{0.25}$
Q_d	$=$	$160 - 4 P$

$$\begin{aligned}
 \text{Point PED} &= \frac{\Delta Q_d}{\Delta P} \times \frac{P}{Q_d} \\
 &= -4^* \times \frac{15}{100} \\
 &= \underline{\underline{-0.6}}
 \end{aligned}$$

* Since the equation was converted to the format of $[Q_d = a - bP]$, the slope or the (b) component i.e. (- 4), upon conversion can be applied as the first component of the Point PED formula.

Option – II

$$\begin{aligned}
 \text{Point PED} &= \frac{\Delta Q_d}{\Delta P} \times \frac{P}{Q_d} \\
 &= \frac{1}{-0.25} \times \frac{15}{100} \\
 &= \underline{\underline{-0.6}}
 \end{aligned}$$

In this approach we have applied the reciprocal of the slope (1/0.25), when estimating Point PED. This is required since the format of the equation given is $[P = a - bQ_d]$.

BACK TO THE QUESTION (Q 13)

- (B) The principal limitation of Point PED tends to be its relatively narrow or specific focus; thus the Point PED coefficient is not able to provide an overall or average indication about the nature of price elasticity with regards to the product under consideration. In other words based on the limited scope of price and quantity information considered; an overall conclusion cannot be reached with regards to the price elasticity of a product using point PED coefficient.

This limitation is further aggravated since price elasticity tends to vary from elastic to inelastic at different prices downwards along the demand curve.

- (C) Arc price elasticity of demand measures the responsiveness of quantity demanded of a particular product to a relatively **large or greater** change in the price and quantity demanded. In other words, this measures the elasticity **between two** or more **points** of a given products **demand curve** (between a certain range of points). Arc elasticity measures the proportionate sensitivity of quantity demanded to a proportionate change in price, by **averaging out price and quantity**. This is also termed as the **Mid-point Method**.

Therefore, Arc PED can be considered as a much broader or comprehensive means of measuring price elasticity of demand, relative to point PED.

Arc elasticity can be calculated using the following formula

$$\text{Arc PED} = \frac{\Delta Q_d}{\Delta P} \times \frac{P_1 + P_2}{Q_1 + Q_2}$$

In the above formula, the first component (on the left) is the '**Slope or Gradient**' of the demand standard demand equation (or **Price Coefficient**). The second component (on the right) is the average of the two prices and quantities corresponding to two points (coordinates) **on the demand curve or schedule**. The whole second component is essentially the '**Average Price: Quantity Ratio**'.

STRQ [15]

'There is an important relationship between **price elasticity** and **consumer outlay or expenditure** on a certain product', explain this statement.

(05 marks)

Consumer outlay or expenditure (essentially, also sales revenue) refers to the total expenditure consumers' are willing to incur on a given quantity of a given product at a given price. The outlay consumers plan to incur on a certain product internally is the income or revenue the producers of the product can expect to earn. The amount of the consumer outlay is quantity demanded multiplied by the relevant price per unit of the product [Consumer Outlay = $Q_d \times P$].

The implication of the above formula and concept tends to be that a change in the product price and the corresponding change in quantity demanded; shall essentially impact on a consumer's outlay on the product.

It is very important to understand when we say 'Change' in Qd in response to a change in price; it's not only the increase or decrease in quantity (ΔQ_d), but also how much quantity demanded changes relative to the change in price ($\Delta Q_d </> \Delta P$). Accordingly in order to comment on how consumer outlay changes when price changes, two elements of knowledge need be applied simultaneously.

- ✓ Applicability of Law of Demand
- ✓ Nature of Price Elasticity of Demand (PED)



$$\Delta \text{Con. Outlay} = \Delta Q_d \times \Delta P$$

Example

If a product is relatively elastic, when price increase we expect consumer outlay (Producer income) to reduce. This is because when price increases the quantity demanded will reduce and reduce by a greater proportion in comparison to the increase in price [$\uparrow \Delta P < \downarrow \Delta Q_d$].

Summary [01]:

Price (ΔP)	Elasticity	(Δ) in Consumer Outlay
Increase	Relatively Elastic	Decreases
Increase	Reactively Inelastic	Increases
Increase	Unitary Elastic	Constant
Decrease	Relatively Elastic	Increases
Decrease	Reactively Inelastic	Decreases
Decrease	Unitary Elastic	Constant

Summary [02]:

[1] A product with an 'Elastic Demand'		
Price (ΔP)	(Δ) in Consumer Outlay	Relationship
Increase [$\uparrow$]	Decrease [$\downarrow$]	Negative [Indirect]
Decrease [$\downarrow$]	Increase [$\uparrow$]	
[2] A product with a 'Inelastic Demand'		
Increase [$\uparrow$]	Increase [$\downarrow$]	Positive [Direct]
Decrease [$\downarrow$]	Decrease [$\downarrow$]	

Businesses should apply this knowledge in making practical pricing decision about their market offerings; think about how you would apply this knowledge.

STRQ [16]

Outline the main determinants of Price Elasticity of Demand (PED).

(04 marks)

- **The availability of Substitute goods (the abundance of substitutes)**
If a given product represents many close substitutes, PED tends to be relatively elastic and goods with small number of relatively distant substitutes represent inelastic PED.
- **The percentage of income spent or allocated on the product.**
Any products on which consumers spend a relatively large proportion of income tend to be relatively elastic, while goods with a small proportionate allocation of income tend to be relatively inelastic.
- **The nature of the good**
If a given product is a Luxury good by many consumers, PED becomes relatively elastic and with regards to Essential products the PED tends to be relatively inelastic.
- **The time horizon or difference after a change in price**
In the short-term PED tends to be rather inelastic, while in the long-term PED is relatively elastic.

STRQ [17]

(A) What is meant by the concept 'Income Elasticity of Demand?'

(B) Comment on the **types of income elasticity of demand** coefficient values and its implications on the **nature of products**

(03 marks each)

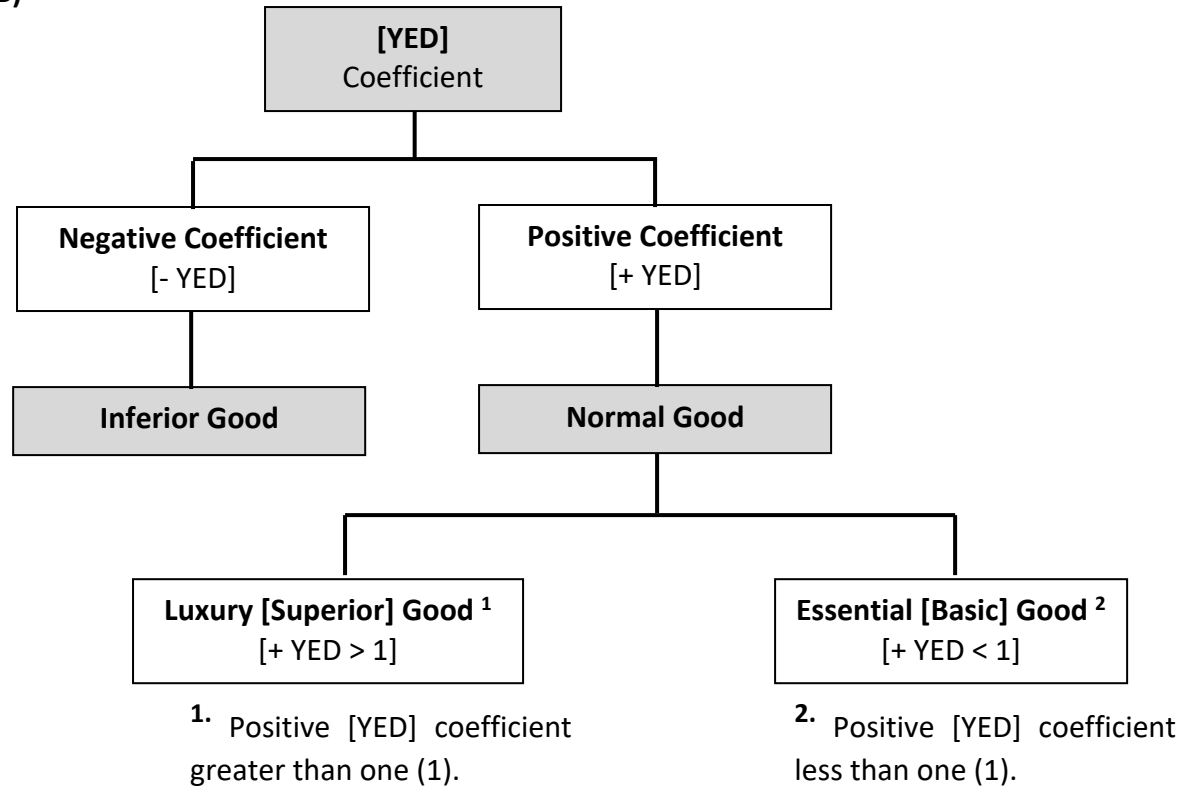
The concept of income elasticity of demand attempts to measure the percentage responsiveness of demand (quantity demanded) to a given proportionate change in consumer income, while other factors (price and other non-price factors) which may affect demand of a given product are held constant at a given point of time.

Income elasticity of demand (YED) coefficient value is estimated using the following general formula.

$$\text{YED} = \frac{\text{Percentage Change in Quantity demanded}}{\text{Percentage Change in Income}}$$

In the process of estimating and interpreting [PED] coefficient values it was common practice to ignore the signage (positive or negative nature of the value), due to the established obviousness of outcome. While estimating [YED] clearly identifying the **positive** or **negative** nature of the coefficient in addition to its value, is essential to distinguish the type of product under consideration.

Part - (B)

**STRQ [18]**

(A) What is meant by the concept ‘Cross Elasticity of Demand?’

(B) Comment on the **types of cross elasticity of demand** coefficient values and its implications on **the relations** between products

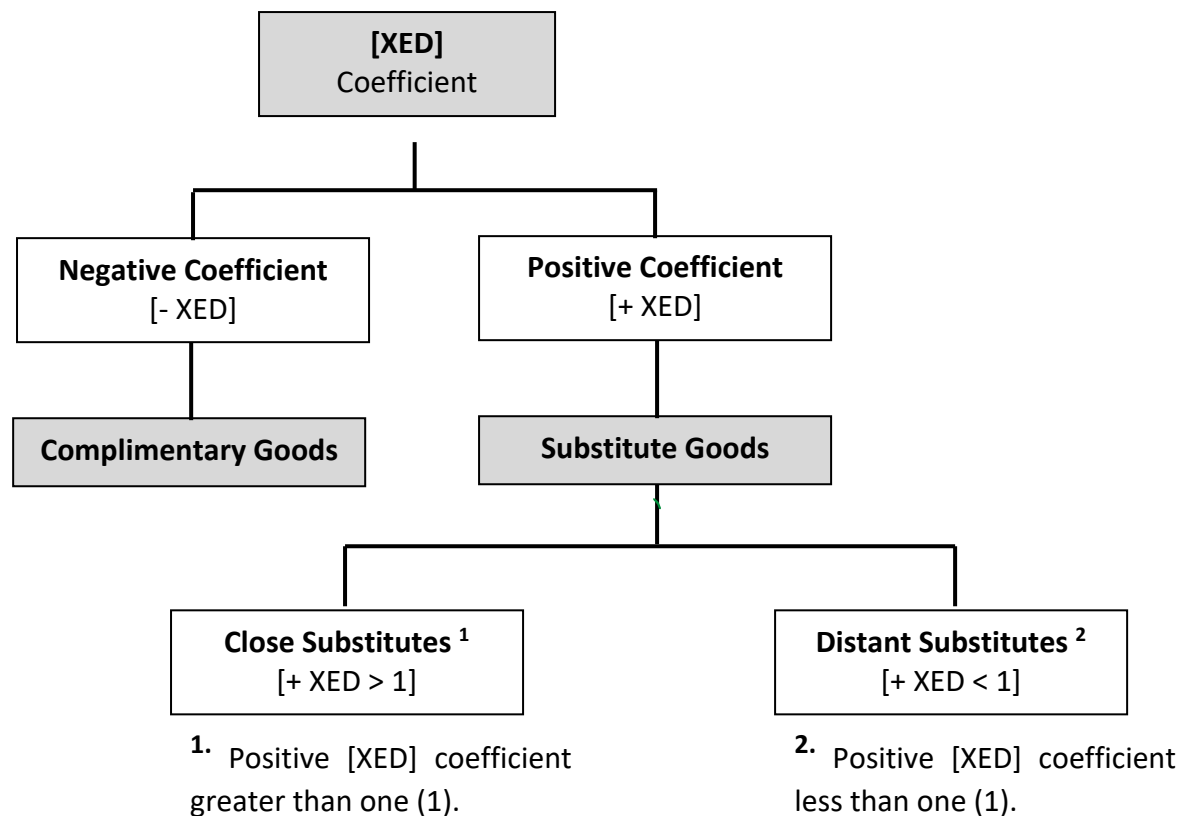
(03 marks each)

The concept of cross elasticity of demand attempts to measure the percentage responsiveness of demand (quantity demanded) of a given product [e.g. Product – (X)] to a change in the price of another product [e.g. Product – (Y)], while other factors which may affect demand are held constant at a given point of time. Cross elasticity of demand (XED) coefficient value is estimated using the following general formula

$$\text{XED} = \frac{\text{Percentage Change in Quantity demanded [Qdx]}}{\text{Percentage Change in Price [Py]}}$$

In the process of estimating [XED] clearly identifying the **positive** or **negative** nature of the coefficient in addition to its value, is essential to distinguish the type of relationship between the two products under consideration.

Part (B)



FURTHER READING

Alternative Approach: YED

$$YED = \frac{\Delta Q_d}{\Delta Y} \times \frac{Y}{Q_d}$$

Practical Applications of YED

- Determines the relative importance of each sector within an economy's output or production structure (Agro, Industries and Services) and explaining structural changes which occur with an economic growth process.
- In order to identify different types of goods (specially from a consumer point of view) in terms of Normal or inferior goods
- The ability to identify the elasticity of essential foodstuff and the differences in income and expenditure patterns between urban and rural households
- Ability to identify disparities in income distribution by observing consumption patterns (types and proportions of goods purchased)

Alternative Approach: XED

$$XED = \frac{\Delta Q_{dy}}{\Delta P_x} \times \frac{P_x}{Q_{dy}}$$

Practical Applications of XED

- The ability to determine the level of monopolistic or market power possessed by a monopolistic firm
- The ability to measure relationship between demand decisions among different goods
- In the process of making taxation, subsidy and other government policy related decisions

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Primary Source;

- Official Marking Schemes: [2005 - 2010 A/L] and [2011 – 2020 A/L], Post marking discussion
- Prof. D. Atapattu [Basic economic text – 1] **New Edition** 2017
- Prof. P. Perera [Introduction to Economics 1, **First Print** 2020]
- Prof. D. Atapattu [Teacher training workshop material – 2016/19]
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- Mind-ventures Overall Mock Exam 2017 - 2020, Suggested Answer Material

Further References;

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