

What is Elasticity of Demand | Graph | Table Determinants | Types | Importance

Elasticity of demand is a concept in economics that measures the responsiveness of the quantity demanded of a good or service to a change in its price. In simpler terms, it helps us understand how sensitive consumers are to price changes. Elasticity of demand is a crucial concept for businesses, policymakers, and economists as it provides insights into consumer behavior and market dynamics.

The formula to calculate the price elasticity of demand (PED) is:

$$\text{PED} = \frac{\% \text{Change in quantity demanded}}{\% \text{Change in price}}$$

What is Elasticity of Demand | Different Definitions

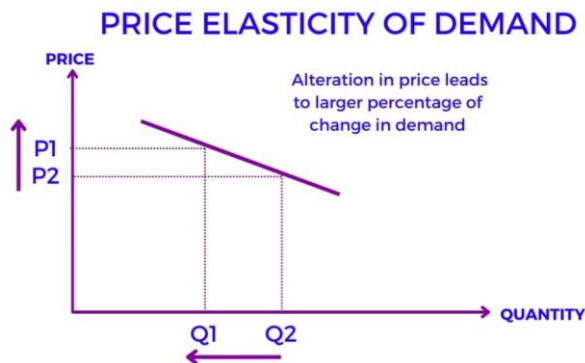
The concept of elasticity of demand explains the level of change in quantity demanded in response to a change in price.

1. **Prof. Stonier and Hague** define elasticity of demand as "the degree of responsiveness in the demand for a good to a change in its price".
2. **Alfred Marshall** defined elasticity of demand as "a measure of the responsiveness of the quantity demanded of a good to a change in its price."
3. **Paul Samuelson** defined elasticity of demand as "the percentage change in the quantity demanded resulting from a 1% change in price."
4. **John Maynard Keynes** says "the measure of the responsiveness of the quantity demanded of a good to a change in income" called elasticity of demand.
5. According to the **George J. Stigler**: "A measure of the responsiveness of the quantity demanded of a good to a change in one of its determinants." known as elasticity of demand.

Price Elasticity of Demand Graph & Table

Price Elasticity of Demand (PED) is a measure of how sensitive the quantity demanded of a good is to changes in its price. It can be represented graphically and with a table to better understand how elasticity works. Let's explore both the graph and table for Price Elasticity of Demand in detail.

Graph of Price Elasticity of Demand (PED):



The graph for PED illustrates the relationship between the percentage change in price and the percentage change in quantity demanded. It typically consists of a demand curve that slopes downward from left to right. Here's how to interpret it:

1. **Perfectly Elastic Demand (PED = ∞):** In this extreme case, the demand curve is horizontal, indicating that consumers are perfectly responsive to price changes. Even a slight increase in price leads to a complete drop in quantity demanded. The elasticity is infinite.
2. **Elastic Demand (PED > 1):** For goods with elastic demand, the demand curve is relatively flat, sloping gently downward. Price increases result in proportionally larger decreases in quantity demanded, and vice versa.
3. **Unitary Elastic Demand (PED = 1):** A unitary elastic demand curve is a 45-degree straight line, showing that percentage changes in price and quantity demanded is equal. Total expenditure remains constant as price changes.
4. **Inelastic Demand (PED < 1):** In the case of inelastic demand, the demand curve is steep and almost vertical. Price changes have limited effects on quantity demanded. Consumers are not very responsive to price fluctuations.
5. **Perfectly Inelastic Demand (PED = 0):** The demand curve is a vertical line in this scenario, indicating that quantity demanded remains constant, regardless of price changes. The elasticity is zero.

Table of Price Elasticity of Demand:

A table for PED provides a more detailed breakdown of how percentage changes in price affect quantity demanded. It typically includes columns for different price changes and the corresponding percentage changes in quantity demanded. Here's how to interpret it:

Price Change (%)	Quantity Demanded (%)	PED
10	-20	-2
05	-10	-2
00	00	00
-3	1	0.33
-8	2	0.25

In this table:

- The "Price Change (%)" column represents different price changes.
- The "Quantity Change (%)" column shows the corresponding changes in quantity demanded.

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- The "PED" column calculates Price Elasticity of Demand using the formula $PED = (\% \text{ change in quantity demanded}) / (\% \text{ change in price})$.

In this table, you can see that a 10% increase in price led to a 20% decrease in quantity demanded, resulting in a PED of -2, indicating elastic demand. Conversely, a 3% price decrease only increased quantity demanded by 1%, resulting in an inelastic PED of 0.33.

Both the graph and table help economists and businesses analyze the responsiveness of consumers to price changes, allowing for better pricing and marketing strategies. These tools are essential for understanding how changes in price can affect a product's revenue and overall market dynamics.

Determinants of Elasticity of Demand

If a change the price leads to a large fluctuation in demand, demand is said to be sensitive or responsive.

On the hand, if there is a deflection in, price but only a small corresponding change in demand, we say that it's a case in elastic demand. The determinants of elasticity of demand are discussed below

1. Nature of the Product

Comforts and are regarded as elastic products because these types of goods are normally demanded when their prices fall.

However, for wealthy consumers, the demand for these goods can be considered inelastic. In general, such as food and clothing are inelastic in the sense that we cannot do without them.

They are necessities. Therefore, even a large change in price will not bring a great difference in quantity.

2. Availability of Substitutes

Beef and mutton can be considered close substitutes. So, we can say that demand for mutton is elastic because if the price of beef were to go up, more people would turn to mutton.

Meaning that if there is a small increase in the price of beef, quantity demanded it goes down with other things remaining the same and quantity demanded mutton will go up as it is a substitute for beef.

Therefore, demand for mutton is elastic. Actually, it works both ways and the same theory can be said about beer.

3. Case for Joint Demand

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Joint demand is when a product has relied on another to give maximum satisfaction. e.g. pens and ink or paper: cars and petrol.

The demand for these products is inelastic because in the event of a price change, however big or small the change may be, demand will not change much.

4. Habit, Fashion, and Customs

We can define the point in all these aspects. Drinking and smoking are the habits of a consumer, fashion is observed by those consumers who want to keep in style, while custom is a part of traditions e.g. wedding ceremonies.

Therefore, cigarettes, stylish dresses and wedding presents or customs are regarded to be inelastic because they are products which human beings want to have no matter what the cost might be.

5. Deferred Demand

Deferred demand is the demand for a product which can be postponed until its price is at the desired level, as the consumers see it.

Take the case of furniture or electrical appliances as the prices of these products go up.

We will not purchase them at that time but maybe sometime later: when the price has gone down. Therefore, in case deferred demand products, demand is elastic.

6. Price Level

In the case of high price products demand is regarded to be inelastic. For example, high price' products such as luxuries (cars, jewelry etc) are still purchased by rich people even though their prices have gone up.

Low price products such as salt and pepper even though their prices may fall, quantity demanded of them will remain roughly the same Hence demand for these products is inelastic.

7. Level of Income

The demand in the case of rich people is generally inelastic because they have high incomes. Even if the prices of consumer products go up the quantity demanded them will not vary that much.

However, to the poor people, who will have low-income demand is most elastic because they are more sensitive to price change.

Types of Elasticity of Demand

There are three types of demand regarding a product. They are price demand, income demand, and cross-demand. Therefore, an elasticity of demand is also of three types.

1. Price Elasticity of demand
2. Income Elasticity of demand
3. Cross Elasticity of demand

We shall now look into these types of elasticity of demand.

1. Price Elasticity of Demand

It is the degree of responsiveness in the quantity demanded of a product to a change in its price. Price elasticity of demand can be measured in three ways:

- Total outlay method
- Percentage method
- Geometric method

(i) TOTAL OUTLAY METHOD: In this method, we compare the total outlay of the consumer before and after variation in price. Here, an elasticity of demands is expressed in three ways:

- Unity
- Greater than unity
- Less than unity

If the quantity demanded of a product change due to a change in price and the total of the consumer remains constant, then the elasticity of demands will be equal to unity.

If the quantity demanded of a product rises due to a fall in its price which results in the Outlay Of the consumer increasing, elasticity of demands will be more than unity.

Again' if a fall in the price results in the quantity demanded for the product to increase and the Outlay of the consumer falls, elasticity of demands would be less than unity,

(ii) PERCENTAGE METHOD: The previous method only showed us the extent of elasticity of demands. With the percentage method, we are able to be more precise as to how much elastic the demand is.

- Point elasticity of demand
- Arc elasticity of demand

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(a) POINT ELASTICITY OF DEMAND: When there a small change in the quantity demanded of a product in response to a small change in its price, there will appear a point on the demand curve.

The measurement of elasticity of demands at that point is called elasticity of demands”

(b) ARC ELASTICITY OF DEMAND: When the quantity demanded of a product and price changes considerably that there appear two distinct points on the demand curve.

Elasticity of the arc made by these two points is called “arc elasticity of demands” in order to apply percentage method in either of two cases.

The Ratio between the percentage change in quantity demanded of a product and the percentage change in its price calculated to determine the coefficient of elasticity of demands.

(iii) GEOMETRIC METHOD: This method enables us to measure the elasticity of demands at any point on the demand curve.

However, both these situations are hypothetical and the probability that they might actually take place is very little.

2. Income Elasticity of Demand

If other things remain constant, elasticity of demands regarding income is degree of change in the quantity of a product in response to change i.e.

NY = Percentage change in quantity demanded

In the case of normal goods, when income goes up the quantity demanded will also up. Hence, it will result in income elasticity of demands to be positive, In the case of inferior goods.

When income goes up quantity demanded goes because people will now have the purchasing power to buy better Hence, it will result in income elasticity of demands being negative.

3. Cross Elasticity of Demand

In this case, we take the examples of substitutes and complementary goods (i.e. jointly demanded goods e.g. car and petrol).

NY = Percentage change in Qd of good A < - > A&B Goods are assumed to be

Percentage change in P of good B either substitutes or complementary goods, the measurement of cross elasticity of demands shows that:

- In case of elasticity of demands is positive
- In case of complementary good, an elasticity of demands is negative

Importance of Elasticity of Demand

1. Price Determination

In the case of products whose demand for these products will not be high. In this way, the customers will more of these products. If the prices were to be high, the consumers would go for the substitutes.

However, in the case of inelastic demand, the price of these products may be quite high because these goods are necessities to the consumer.

2. Guidance for Taxation

Taxation on commodities that are demand-wise is high as demand for these products is equally high, for example, cigarettes.

Smoking is a habit of so even if a high tax rate is implemented on cigarettes that will not endanger its demand in the market.

Whereas commodities that are elastic taxation is low as demand for these to price change. Examples of these products are furniture, meals at restaurants etc.

3. Guidance for Monopolists

In the case of market demand for elastic goods, the price will be lowered and at the same time demand for the good will be stimulated through, advertisements etc In order to maximize monopoly revenue.

In the case of inelastic goods, the price will be higher and it will be sold in a larger quantity as the monopolists know that the consumer will buy the product at any price as demand is inelastic.

4. Guidance for Industrialists

If the demand for a product is elastic, the industrialist will prefer to produce that product under the law of increasing returns which will enable him to produce more and dispose of them quickly.

However, if the product is inelastic, the Industrialist will continue to produce the product under the law of diminishing returns, which means that he will produce less and still dispose of the output quickly.

5. Determination of Fares

For elastic transport, e.g. buses, taxies etc. fare has to be low as this is the main means of transportation on land.

Therefore, the price of transport was to be increased there would be a substitute, e.g. train, Sub-way, mono etc.

However, for Inelastic transport. e.g. air travel the fare is quite high as there is no other alternative for a person to get to one place from another as quickly as possible.

6. Correcting the Adverse Balance of Trade

If the demand for a product in the international market is elastic, then export earnings will remain low and the balance of trade will remain unfavorable for the country.

To make it favorable, a country always desires to make the demand for its products inelastic in the international market which will allow it to raise the price and boost its exports.

Conclusion

Elasticity of demand is not a one-size-fits-all concept. It varies from product to product and is influenced by factors like the availability of substitutes, consumer preferences, and market conditions. By analyzing elasticity, businesses and policymakers can make informed decisions that impact pricing, taxation, and resource allocation.