

Econocode

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Basic Details:

Principles of Economics Assignment 2	Econocode
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Batch	20
Undergraduate at university of Moratuwa	Bsc. Hons. in Information Technology
Project	Elasticity calculator - Econocode
Used Programming Language	JavaScript
Other Tools and Technologies	HTML, CSS, VS Code

Area/Concept: “Elasticity”**Short Description:**

Calculator to calculate ,

- Price Elasticity Of Demand
- Cross Elasticity Of Demand
- Income Elasticity Of Demand
- Price Elasticity Of Supply

This is a frontend web application built using HTML, CSS

And Programmed using JavaScript.

(Since frontend HTML elements handling is little bit complicated to show using pseudo code, I just included the pseudo code of the logical parts/ calculating parts)

Sample Problems Solutions and Pseudo Codes:**Price Elasticity Of Demand****Sample problem 1:**

The price of a good is Rs. 200 and annual demand for that good is 500,000 units. Market research reveals that a price increase of Rs. 20 will result in a fall in the annual demand of 425,000 units.

Calculate price elasticity of demand.

$$\text{Price Elasticity Of Demand} = \frac{\text{Percentage Change In Quantity Demanded}}{\text{Percentage Change In Price}}$$

P(Rs.)	Q
200	500,000
220	425,000

$$\begin{aligned} \text{Percentage Change in quantity demanded} &= 75,000 / 500,000 \times 100\% \\ &= 15\% \end{aligned}$$

$$\begin{aligned} \text{Percentage Change in price} &= 20 / 200 \times 100\% \\ &= 10\% \end{aligned}$$

$$\begin{aligned} \text{Price Elasticity Of Demand} &= 15\% / 10\% \\ &= 1.5 \end{aligned}$$

Pseudo code:

BEGIN

```

INPUT previousPrice, newPrice, previousDemand, newDemand
PCD = (newDemand - previousDemand)/previousDemand * 100
PCP = (newPrice - previousPrice)/previousPrice * 100
PED = PCD/PCP
IF PED<0
    PED = PED * -1
IF PED<1
    elt = "Inelastic";
ELSE IF PED>1
    elt = "Elastic";
ELSE IF PED == 1
    elt = "Unitary elastic"
OUTPUT PED,elt

```

END

Sample problem 2:


Percentage Change in quantity demand is 15% and Percentage Change in price 10%. Calculate price elasticity of demand.

$$\begin{aligned} \text{Price Elasticity Of Demand} &= 15\% / 10\% \\ &= 1.5 \end{aligned}$$



Pseudo code:

```
BEGIN
  INPUT PCD,PCP
  PED = PCD/PCP
  IF PED<0
    PED = PED * -1
  IF PED<1
    elt = "Inelastic";
  ELSE IF PED>1
    elt = "Elastic";
  ELSE IF PED == 1
    elt = "Unitary elastic"
  OUTPUT PED,elt
END
```

Measuring cross elasticity of demand



Cross Price Elasticity of Demand Formula = $\frac{\text{Percent Change in a Quantity of Good A}}{\text{Percent Change in the Price of Good B}}$



Sample problem 1:

Movie Ticket prices increases from Rs. 500.00 to Rs.800.00. This caused the demand for Popcorn buckets to drop from 1000 to 700. Find the cross elasticity of demand between the two products.

Percentage change in the quantity of Popcorn buckets = $(700 - 1000)/1000 \times 100\%$
= -30%

Percentage change in the price of movie ticket = $(800 - 500)/500 \times 100\%$
= 60%

Cross elasticity of demand = $-30\% / 60\%$
= - 0.5

Pseudo code:

```
BEGIN
  INPUT priceB1, priceB2, demandA1, demandA2
  PCQA = (demandA2 - demandA1)/demandA1 * 100
  PCPB = (priceB2 - priceB1)/priceB1 * 100
  CPED = PCQA/PCPB
  OUTPUT CPED
END
```

Sample problem 2:

Percentage change in the quantity of good A is -30% and Percentage change in the price of good B is 60%. Find the cross elasticity of demand between the two products.

$$\begin{aligned} \text{Cross elasticity of demand} &= -30\% / 60\% \\ &= - 0.5 \end{aligned}$$

Pseudo code:

```
BEGIN
  INPUT PCQA, PCPB
  CPED = PCQA/PCPB
  OUTPUT CPED
END
```

Measuring income elasticity of demand

Income Elasticity of Demand Formula

$$\text{Income Elasticity of Demand} = \frac{\text{Percentage Change in Quantity Demanded } (\Delta Q)}{\text{Percentage Change in Consumers Real Income } (\Delta I)}$$



Sample problem 1:

The quantity demanded of salmon increases by 12% and you get a 10% raise. What is the income elasticity of demand for salmon?

$$\begin{aligned} \text{IED} &= \text{PCQD}/\text{PCI} \\ &= 12\% / 10\% \\ &= 1.2 \end{aligned}$$

Pseudo code:

```
BEGIN
    INPUT PCQD, PCI
    IED = PCQD/PCI
    OUTPUT IED
END
```

Sample Problem 2:

If a strong recovery raises national income from \$12.0 trillion to \$13.2 trillion and diamond sales jump from 3 to 5 million carats annually, calculate the income elasticity of demand for diamonds.

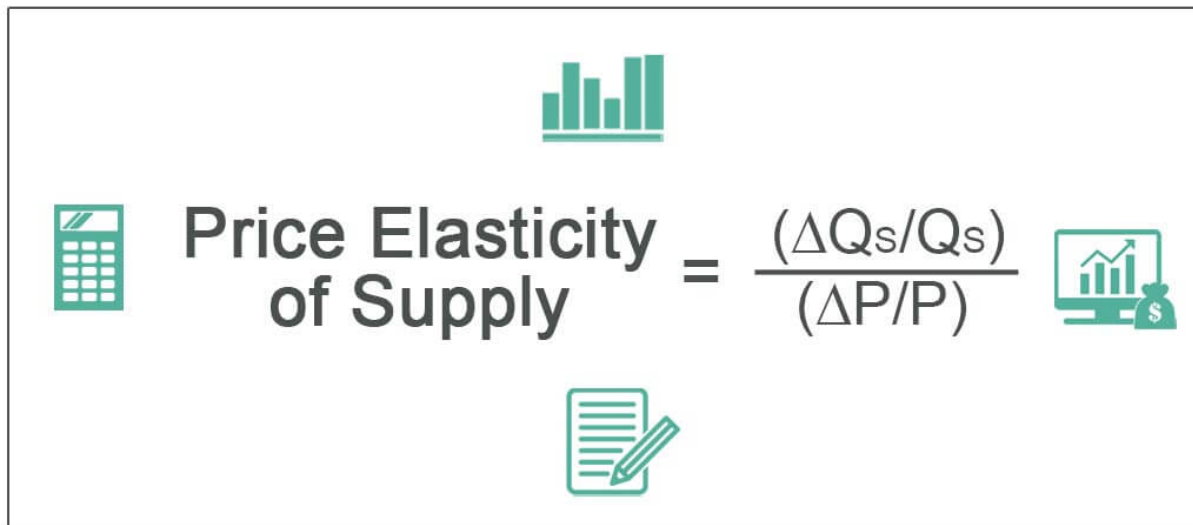
$$\begin{aligned} \text{The \% change in the quantity} &= 5-3/3 * 100 = 66.67 \\ \text{The \% change in the income} &= 13.2-12/12 * 100 = 10 \\ \text{IED} &= 66.67/10 \end{aligned}$$

$$\text{IED} = 6.667$$

Pseudo code:

```
BEGIN
    INPUT income1, income2, Qdemand1, Qdemand2
    PCQD= (Qdemand2 - Qdemand1)/Qdemand1 * 100
    PCI= (income2 - income1)/income1 * 100
    IED = PCQD/PCI
    OUTPUT IED
END
```

Measuring price elasticity of supply


$$\text{Price Elasticity of Supply} = \frac{(\Delta Q_s / Q_s)}{(\Delta P / P)}$$

Sample problem 1:

Calculate the value of price elasticity of supply of commodity A if the percentage change in price of the commodity is 10% and percentage change in its quantity supplied is 18%

$$\begin{aligned} \text{Price elasticity of supply} &= \% \text{ change in quantity supplied} / \% \text{ change in price} \\ &= 18\% / 10\% \\ &= 1.8 \end{aligned}$$

Pseudo code:

```
BEGIN
    INPUT PCQS, PCP
    PES = PCQS/PCP
    OUTPUT PES
END
```

Sample problem 2:

A firm sells 40 units of commodity X when its price is Rs.10. When X price is Rs. 16.25 it will sell 60 units of the commodity. What is the price elasticity of supply for X?

$$\begin{aligned} \text{Price elasticity of supply} &= \% \text{ change in quantity supplied} / \% \text{ change in price} \\ &= (60-40)/40 * 100\% / (16.25 - 10)/10 * 100\% \\ &= 50\% / 62.5\% \\ &= 0.8 \end{aligned}$$

Pseudo code:

BEGIN

INPUT inPrice, fnlPrice, , inSup, fnlSup

$PCQS = (fnlSup - inSup) / inSup * 100$

$PCP = (fnlPrice - inPrice) / inPrice * 100$

$PES = PCQS / PCP$

OUTPUT PES

END