DP IB Economics: SL

Your notes

2.5 Income Elasticity of Demand (YED)

Contents

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2.5.1 Definition, Calculation & Illustration of YED

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Definition & Calculation of YED

- **Changes in income** result in changes to the **demand** for goods/services
  - Economists are interested **in how much** the **quantity demanded will change** for different products
- **Income elasticity of demand (YED)** reveals how **responsive** the change in **quantity demanded** is to a change in **income**

Calculation of YED

- **YED can be calculated** using the following formula

$$\text{YED} = \frac{\%\ \text{change in quantity demanded}}{\%\ \text{change in income}} = \frac{\%\,\triangle\ \text{in QD}}{\%\,\triangle\ \text{in Y}}$$

Worked Example

A consumer's **income rises** from SG$ 100 to SG$ 125 a week. They originally consumed 12 bubble teas but this **increased** to 15 bubble teas a week. Calculate the **YED** of the bubble teas

[2 marks]

Answers:

Step 1: Calculate the % change in QD

$$\%\,\triangle\,\text{QD} = \frac{15 - 12}{12} \times 100$$

$$\%\,\triangle\,\text{QD} = 25\,\%$$

Step 2: Calculate the % change in Y

$$\%\,\triangle\,Y = \frac{125 - 100}{100} \text{ x } 100$$

$$\%\,\triangle\,Y = 25\,\%$$

Step 3: Insert the above values in the YED formula

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$$YED = \frac{\% \Delta \text{ in QD}}{\% \Delta \text{ in Y}}$$

$$YED = \frac{25}{25}$$

$$YED = 1$$

(Two marks for the correct answer or 1 mark for any correct working)

Interpreting YED Values

- The YED value can be positive or negative and the value is important in determining the type of good
  - A good with a **positive YED** value is considered to be a **normal good**
    - Normal goods can be classified as **necessities** or **luxuries**
  - A good with a **negative YED** value is considered to be an **inferior good**

Engle Curves

- **Engle curves** are a model used to illustrate the relationship between income and the quantity demanded (QD)
  - **Income** is presented on the Y-axis and **quantity demanded** on the X-axis

The Value of YED Determines the type of good and Response to Changes in Income

Value	Type of Good	Explanation	Engel Curve

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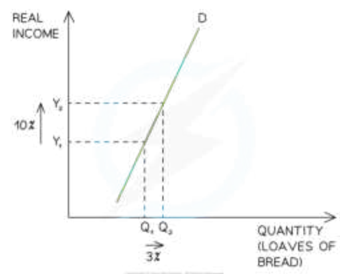
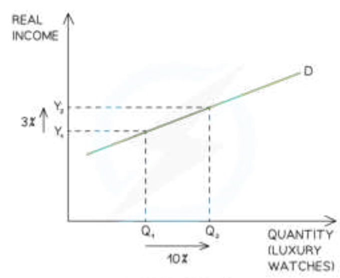
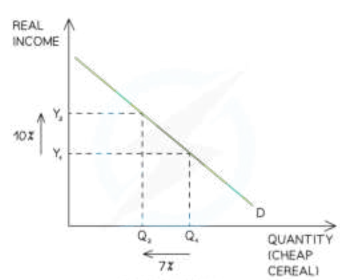
0→1	**Necessity**	▪ Normal good - quantity demanded increases when income increases ▪ Income inelastic which means that it is relatively unresponsive to a change in income ▪ E.g. A 10% increase in income leads to a 3% increase in QD	
YED > 1	**Luxury**	▪ Normal good - quantity demanded increases when income increases ▪ Income elastic which means that it is relatively responsive to a change in income ▪ E.g. A 3% increase in income leads to a 10% increase in QD	
YED < 0	**Inferior Good**	▪ Quantity demanded decreases when income increases ▪ E.g. Consumers switch from purchasing a supermarkets own brand cereal to Kellogg's cereal as income increases	

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Examiner Tips and Tricks

Remember this distinction! With PED values the negative sign is always ignored. However for YED, the sign is integral to understanding if the good is a normal (+) or inferior (-) good.

Factors that Influence YED

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- YED is influenced by **any factors in an economy** which change the wages of workers
  - During a **recession** wages usually fall and demand for **inferior goods** rises while demand for **luxury goods** falls
  - During a period of **economic growth** and rising wages, demand for luxury goods increases while demand for inferior goods decreases
  - Other influences on income include **minimum wage legislation**, **taxation, increased international trade**

The Importance of YED

- YED is crucial for firms as it helps them **understand consumer behaviour**, analyse markets, plan strategies, make informed investment decisions, and **adapt to changes in the sectoral structure of the economy**
- By assessing the income elasticity of demand, firms can effectively navigate evolving market dynamics and **position themselves for sustainable growth**

An Explanation of how Firms can use YED Effectively

Factor	Explanation
Understand consumer behaviour	▪ YED helps firms understand how **changes in income levels affect consumer demand** for their products or services ▪ By examining the income elasticity of demand for different goods and services, firms can identify **which sectors are more sensitive to changes in income**
Adapt to changes in the sectoral structure of the economy	▪ Changes in the income elasticity of demand can indicate shifts in consumer preferences and patterns of consumption ▪ Firms **need to adapt t**o these changes to remain competitive ▪ If a sector experiences declining demand due to a low income elasticity (YED < 1), firms may need to consider diversifying their product offerings or **exploring new markets** to sustain growth ▪ Sectors with high income elasticity (YED > 1) can **provide opportunities for firms** to specialise and cater to the growing demand

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Example

- As income levels increase, consumers' preferences and concerns about **environmental sustainability** may lead to a higher demand for electric vehicle's (EVs)
- The income elasticity of demand for EVs can help firms estimate the potential market growth and **justify investment decisions**
- With a YED > 1, the EV sector is likely to **experience rapid expansion** as income levels rise, prompting firms to **invest in manufacturing facilities**, research and development, and charging infrastructure
- This will further **shift the sectoral structure of the economy**, as the rising demand for EVs can result in the **growth of related industries such as battery manufacturing, renewable energy, and charging networks**

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