



**MINISTRY OF EDUCATION
GHANA ECONOMICS
TEACHERS' ASSOCIATION**



Economics

for Senior High Schools

Year 3



**Salitsi Freeman Etornam
Benjamin Agyekum
Enock Tetteh Kwabla**



**MINISTRY OF EDUCATION
GHANA ECONOMICS TEACHERS'
ASSOCIATION**

Economics

for Senior High Schools

Year 3

**Salitsi Freeman Etonnam
Benjamin Agyekum
Enock Tetteh Kwabla**



Ghana Education
Service (GES)





© Ministry of Education 2025

This publication is not for sale. All rights reserved. No part of this publication may be reproduced without prior written permission from the Ministry of Education, Ghana.

Contents

FOREWORD.....	iv
ELASTICITY OF DEMAND.....	1
DEMAND FOR GOODS AND SERVICES.....	2
UTILITY.....	31
CONSUMER BEHAVIOUR.....	32
FIRM AND INDUSTRY.....	45
Production of Goods and Services.....	46
ELASTICITY OF SUPPLY.....	75
Supply Of Goods and Services.....	76
CHANNELS OF DISTRIBUTION.....	89
Market Analysis.....	90
PRICE CONTROL.....	101
PRICE AND EQUILIBRIUM ANALYSIS.....	102
MACROECONOMIC VARIABLES.....	114
Macroeconomic Variables (GDP, Inflation, Unemployment, Exchange Rate)..	115
NATIONAL BUDGET.....	133
Concept of Money, Financial Institutions and Public Finance.....	134
AGRICULTURE AND INDUSTRIALISATION.....	156
Agriculture, Industrialisation, And Trade.....	157

FOREWORD

Ghana's new Senior High School Curriculum aims to ensure that all learners achieve their potential by equipping them with 21st Century skills, knowledge, character qualities and shared Ghanaian values. This will prepare learners to live a responsible adult life, progress to further studies and enter the world of work. This is the first time that Ghana has developed a Senior High School Curriculum which focuses on national values, attempting to educate a generation of Ghanaian youth who are proud of our country and can contribute effectively to its development.

The Ministry of Education is proud to have overseen the production of these Learner Materials which can be used in class and for self-study and revision. These materials have been developed through a partnership between the Ghana Education Service, teacher unions (Ghana National Association of Teachers- GNAT, National Association of Graduate Teacher -NAGRAT and the Coalition of Concerned Teachers- CCT) and National Subject Associations. These materials are informative and of high quality because they have been written by teachers for teachers with the expert backing of each subject association.

I believe that, if used appropriately, these materials will go a long way to transforming our Senior High Schools and developing Ghana so that we become a proud, prosperous and values-driven nation where our people are our greatest national asset.

Haruna Iddrisu MP

Minister for Education

SECTION

1

ELASTICITY OF DEMAND



DEMAND FOR GOODS AND SERVICES

INTRODUCTION

Welcome to Year Three! Economics gets even more exciting as you begin to see how it helps solve real-life problems faced by families, businesses, communities and the nation. In this section, you will explore the elasticity of demand, which is how buyers respond to changes in prices, incomes or the prices of related goods. You will learn how to calculate price, income and cross elasticity, understand the factors that influence them and see how this knowledge is used by producers, consumers and governments to make decisions. This builds on what you already know. In your earlier studies, you discovered the meaning of demand, the law of demand and its types. You also examined what affects demand and how to differentiate between a change in demand and a change in quantity demanded. Now, you will use these ideas to understand how demand changes and why it matters in everyday economic choices.

KEY IDEAS

- Cross elasticity of demand explains how the demand for one product responds when the price of a related product (like a substitute or complement) changes.
- Elasticity of demand is a useful tool for producers and governments. It helps them decide how to set prices, plan production or introduce policies like taxes and subsidies based on how consumers react.
- Elasticity of demand measures how sensitive the quantity demanded is to changes in price, consumer income or the price of related goods. It tells us how strongly buyers respond to economic changes.
- Income elasticity shows how the demand for a product changes when consumers' income increases or decreases.
- Several factors influence elasticity, including how easily consumers can switch to other products, whether the good is a necessity or a luxury and how much time they have to adjust to price changes.

Introduction to Elasticity of Demand

Elasticity of demand measures how the quantity demanded of a commodity changes when there is a change in the determinants of demand, such as the price of the commodity itself, income, and the prices of related goods. It is also defined as the degree of responsiveness of quantity demanded to changes in determinants of demand, such as the price of the commodity itself, income, and the prices of related goods.

The knowledge of elasticity of demand helps traders, shoppers and government officials to make better decisions about prices, taxes and how to use resources.

Types of Elasticity of Demand

1. Price Elasticity of Demand (PED)

This measures the responsiveness of the quantity demanded of a commodity to a change in price of the commodity itself. If the price of tomatoes goes up in the market, do people buy less or buy more?

2. Income Elasticity of Demand (YED)

This measure how the quantity demanded of a commodity changes when income changes. That is, when the consumer's income increases or decreases, he or she may buy more or less, depending on the type of commodity. If salaries increase in Ghana, will consumers buy more rice? Why?

3. Cross Elasticity of Demand (XED)

This measures how the demand for one commodity (commodity A) changes when the price of another commodity (commodity B) changes. This happens when the goods are substitutes or complements. If the price of Coca-Cola increases, will consumers buy more or less of Fanta? Why?

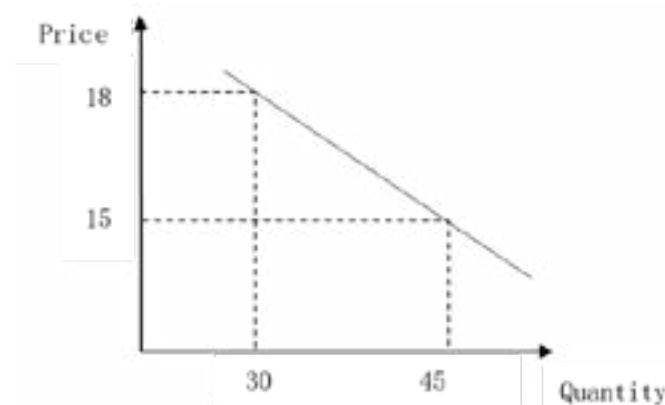
Types of Price Elasticity of Demand

The responsiveness of quantity demanded to change in price can be put into five types and these are determined by the numerical values (coefficient of elasticity).

1. Relatively Elastic Demand ($PED > 1$)

This occurs when a small percentage change in price results in a bigger percentage change in quantity demanded. This means that the price elasticity of demand is greater than one. This type of commodity has many close substitutes. It is also known as fairly elastic demand.

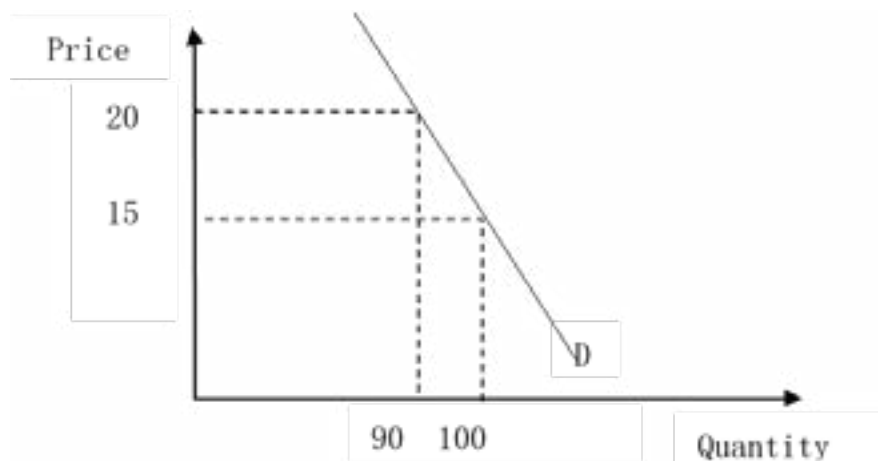
Example: A 10% increase in the price of a Samsung phone may result in a 20% drop in the number of people buying it. People have other options, so they can easily switch to another phone or brand.



2. Relatively Inelastic Demand ($PED < 1$)

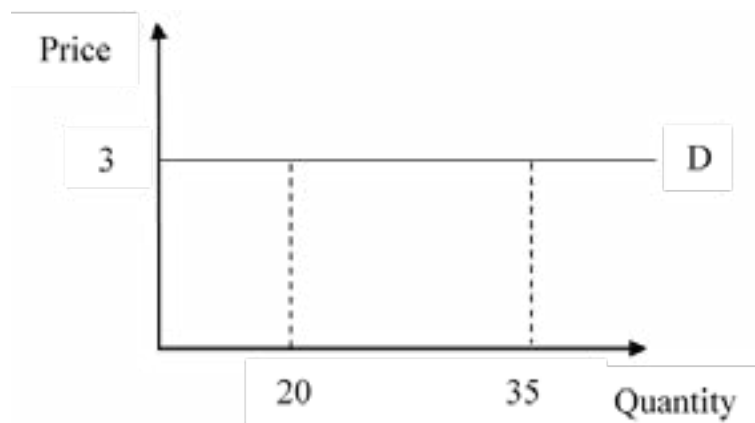
This is where a proportionate change in price results in a less than proportionate change in quantity demanded. It is also known as fairly inelastic demand.

Example: If transport fares have increased by 15% and as a result, commuters have only reduced the number of times they take a trotro by 5%, then demand is inelastic. This is because commuters cannot completely do away with taking a trotro.



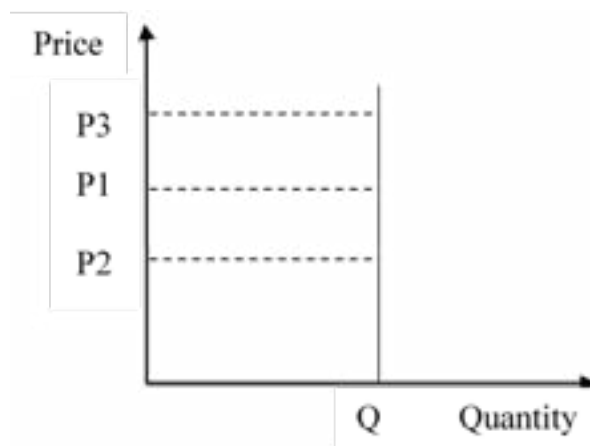
3. Perfectly Elastic Demand ($PED = \infty$)

Perfectly elastic demand occurs when consumers are willing to buy any quantity of a good only at a specific fixed price. If the price increases even slightly, the quantity demanded falls to zero. This situation usually exists where there are many perfect or close substitutes for the good. In this case, the coefficient of price elasticity of demand (PED) is equal to infinity (∞). Example: In a Ghanaian competitive market for bottled water, where they are sold at a fixed price. If the price of Voltic water increases slightly, buyers will switch to other brands like Awake drinking water.



4. Perfectly Inelastic Demand ($PED = 0$)

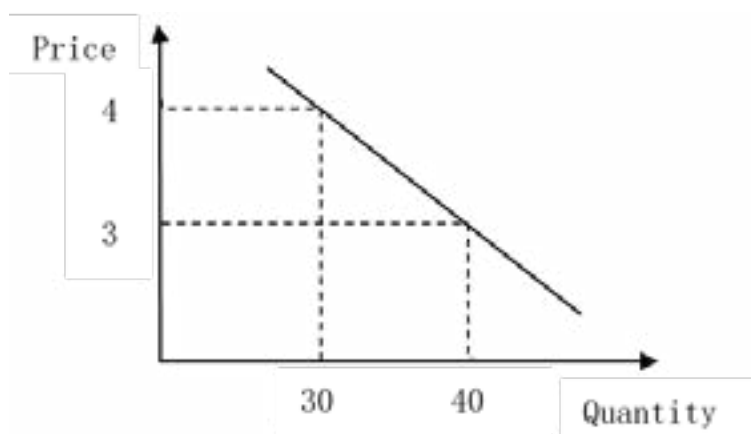
This is when the quantity consumers buy does not change at all, no matter how much the price changes. This happens when the good is a necessity or has no close substitutes. The numerical value is equal to zero. Example: A patient with high blood pressure (BP) will buy BP drugs no matter the price because it becomes necessary for his or her survival.



5. Unitary Elastic Demand ($PED = 1$)

This is when a percentage change in price results in the same or equal percentage change in quantity demanded.

Example: If the price of a bag of maize increases by 5% and as a result, the quantity demanded decreases by 5%, then the percentage change in price is equal to the percentage change in quantity demanded. This means the price elasticity of demand (PED) is equal to 1. In this case, the total revenue of the seller remains unchanged despite the change in price.



Activity 1.1 Revision Activity on Demand

Purpose of the Activity: This activity helps you to revise and apply your knowledge of demand concepts by analysing how various factors affect consumer demand in a familiar Ghanaian context.

Materials Needed: Notebook or exercise book and Pencil or pen

Instructions

Work in pairs (mix genders where possible)

You will read the scenario together and discuss your answers

Also, write your responses in your notebook

Be prepared to share your findings with the class

Scenario: Read this scenario carefully and perform the tasks that follow.

Kofi's Pure Water Business at Tema Station

Kofi sells pure water (ice water) at Tema Station. He has observed the following over the past year:

When he sold at 50Gp per sachet, he sold 200 sachets daily. When he increased to 80Gp, sales dropped to 120 sachets daily. During the hot season (March-April), even at 80Gp, he sells 300 sachets daily.

When workers received salary increases, sales jumped to 250 sachets at the same price. Students buy less during school holidays but more during exam periods. When Fan Ice Yoghurt reduced its price, Kofi's afternoon sales decreased. Kofi also realised that people still buy pure water even when prices rise because they need it to quench their thirst.

Answer these questions.

1. Using Kofi's business situation, create your simple definition of demand and show how his sales pattern demonstrates the law of demand.
2. Investigate the scenario and identify **THREE** non-price factors that influenced Kofi's sales. For each factor, explain how it affected his business using evidence from the scenario.
3. Examine the scenario and find:
 - a. One situation where customers moved along Kofi's demand curve
 - b. One situation where Kofi's entire demand curve shifted.
 - c. Compare the two situations in a and b and explain what makes them different.
4. Analyse the statement "**people still buy pure water even when prices rise because they need it.**" What does this reveal about how sensitive customers are to price changes for pure water? Support your analysis with reasoning.
5. Imagine you are Kofi's business consultant. Based on your analysis of his sales patterns, recommend **two strategic times** when he should adjust his pricing and explain your economic reasoning for each recommendation.

Summary for learners:

Understanding demand helps explain why businesses succeed or struggle in different situations and seasons.

Activity 1.2 Elasticity Detective - Ghanaian Market Analysis

Purpose of the Activity: This activity helps you identify and classify different types of price elasticity of demand by analysing how Ghanaian consumers respond to price changes for various goods and services.

Instructions

1. Work in pairs (mix genders where possible)
2. Read each market scenario carefully
3. Discuss and analyse the consumer behaviour described
4. Complete the tasks in your notebook

Market Scenarios

Scenario A: When petrol prices increased by 20% last month, most drivers still bought almost the same amount because they needed fuel for their daily transport.

Scenario B: When Auntie Mansa increased her waakye price by 10%, her sales dropped by 15% as customers switched to other food vendors nearby.

Scenario C: Dr Mensah's patients continue buying their prescribed malaria medication even when pharmacy prices doubled during shortages.

Scenario D: When MTN reduced call rates by 25%, customer usage increased by exactly 25%, keeping their total spending the same.

Scenario E: In the international gold market, if Ghana tries to sell gold above the world price, buyers will completely stop purchasing from Ghana and buy from other countries instead.

Answer these questions

1. **Sensitivity Analysis:** For each scenario (A-E), determine how sensitive consumers are to price changes. Classify each as:
 - a. Very sensitive to price changes
 - b. Somewhat sensitive to price changes
 - c. Not sensitive to price changes at all
2. **Elasticity Classification:** Match each scenario to the correct type of elasticity:
 - a. Perfectly Elastic Demand
 - b. Relatively Elastic Demand
 - c. Unitary Elastic Demand
 - d. Relatively Inelastic Demand
 - e. Perfectly Inelastic Demand

Create this table in your notebook and use it to answer 2.

Scenario	Type of Elasticity	Reason for Classification
A (Petrol)		
B (Waakye)		
C (Medicine)		
D (Phone calls)		
E (Gold market)		

3. **Real-Life Application:** Think of TWO goods or services in your community and predict their elasticity type. Explain your reasoning based on how people in your area typically respond to price changes.

Good/Service 1:

Reason:

Good/Service 2:

Reason:

4. **Business Implications:** Choose one scenario from A to E and advise the business owner: Should they increase or decrease prices to earn more revenue? Explain your recommendation using elasticity concepts.
5. **Peer Review:** Exchange notebooks with another pair. Check their classifications and suggest improvements or alternative explanations where appropriate.

Summary: Understanding elasticity helps predict how consumers will react to price changes and guides business pricing decisions.

CALCULATION OF PRICE ELASTICITY OF DEMAND

Price Elasticity of Demand (PED) tells about the degree to which the quantity demanded of a product changes when its price changes. We use a formula to calculate this value to show how sensitive consumers are to price changes.

By calculating price elasticity, we know whether a good is elastic, inelastic or unitary, which tells us how consumers react or respond to price changes. For example, a tomato seller at the Kaneshie Market can use the concept of elasticity to determine if increasing prices will reduce sales or not.

Price Elasticity of Demand (PED): The ratio of the percentage change in quantity demanded to the percentage change in price.

Percentage Formula: $PED = (\% \text{ Change in Quantity Demanded}) \div (\% \text{ Change in Price})$

$$PEH = \frac{\% \Delta Q}{\% \Delta P} = \frac{[\% \text{ Change in quantity demanded}]}{[\% \text{ change in price}]}$$

Example 1

If the price of a pack of standard bottled water increases from GH¢40 to GH¢50 and the quantity demanded decreases from 500 packs to 450 packs, calculate the Price Elasticity of Demand (PED) using the percentage change formula.

Solution

Step 1: Identifying the components

Old Price: GH¢40

New Price: GH¢50

Old quantity: 500 packs

New quantity: 450 packs

Step 2: Percentage change in quantity demanded:

$$\frac{450-500}{500} \times 100 = \frac{-50}{500} \times 100 = -10\%$$

Step 3. Percentage change in price

$$\frac{50-40}{40} \times 100 = \frac{10}{40} \times 100 = 25\%$$

Step 4: Substituting the values for PED

$$PED = \frac{-10\%}{25\%} = -0.4 = |-0.4| = 0.4$$

We take the **absolute value** $|-0.4|$, so $PED = 0.4$

Interpretation: Since $PED < 1$, demand is **inelastic**.

This means consumers are not very responsive to price changes. In this case, a 25% increase in price caused only a 10% fall in quantity demanded, so the seller could make more revenue even when the number of packs sold decreased.

Example 2

If the price of a pack of standard bottled water increases by 25% from an initial price of GH¢40 and the quantity demanded decreases by 50 packs from an initial quantity of 500 packs, calculate the Price Elasticity of Demand (PED) using the percentage change formula.

Solution

Step 1: Identifying the components

Old Price: GH¢40

New Price: This will be the GH¢40 plus 25% of GH¢40

$\frac{25}{100} \times 40 = \text{GH¢}10$, Thus $40 + 10 = \text{GH¢}50$

Old quantity: 500 packs

New quantity: 500 minus 50 = $500 - 50 = 450$ packs

Step 2: Percentage change in quantity demanded

$$\frac{450-500}{100} \times 100 = \frac{-50}{500} \times 100 = -10\%$$

Step 3: Percentage change in price

The percentage change in price has already been given in the question, i.e. 25%

Step 4: Substituting the values for PED

$$PED = \frac{-10\%}{25\%} = -0.4 = |-0.4| = 0.4$$

We take the **absolute value** $|-0.4|$, so $PED = 0.4$

Interpretation: Since $PED < 1$, demand is **inelastic**.

This means consumers are not very responsive to price changes. In this case, a 25% increase in price caused only a 10% fall in quantity demanded, so the seller could make more revenue even when the number of packs sold decreased.

Example 3

If the price of a pack of premium bottled water increases by 20% from an initial price of GH¢50 and the quantity demanded decreases by 150 packs from an initial quantity of 400 packs, calculate the Price Elasticity of Demand (PED) using the percentage change formula.

Solution

Step 1: Identifying the components

Old Price: GH¢50

New Price: This will be the GH¢50 plus 20% of GH¢50

$\frac{20}{100} \times 50 = \text{GH¢}10$, Thus $50 + 10 = \text{GH¢}60$

Old quantity: 400 packs

New quantity: 400 minus 150 = $400 - 150 = 250$ packs

Step 2: Percentage change in quantity demanded

$$\frac{250-400}{400} \times 100 = \frac{-150}{400} \times 100 = -37.5\%$$

Step 3: Percentage change in price

The percentage change in price has already been given in the question, i.e., 20%

Step 4: Substituting the values for PED

$$\frac{-37.5}{20} = -1.875 = |-1.875| = 1.875$$

We take the **absolute value** $|-1.875|$, so **PED = 1.875**

Interpretation: Since **PED > 1**, demand is **elastic**. This means consumers are very responsive to price changes. In this case, a 20% increase in price caused a 37.5% fall in quantity demanded, so the seller would lose revenue when prices increase. Premium bottled water has many substitutes (regular water, other beverages), making consumers sensitive to price changes.

Midpoint formula

The midpoint formula uses the average of the old and new values to calculate percentage changes. This formula gives you the same numerical value whether you calculate from:

Price increasing from GH¢10 to GH¢20 or Price decreasing from GH¢20 to GH¢10

$$\text{PED} = [(Q_2 - Q_1) / ((Q_1 + Q_2) / 2)] \div [(P_2 - P_1) / ((P_1 + P_2) / 2)]$$

$$\text{PED} = \frac{[(Q_2 - Q_1) / (\frac{Q_2 + Q_1}{2})]}{[(P_2 - P_1) / (\frac{P_2 + P_1}{2})]} \quad \text{OR}$$

$$\text{PED} = \frac{[(Q_2 - Q_1) / (Q_1 + Q_2)]}{[(P_2 - P_1) / (P_1 + P_2)]} \quad (\text{the 2 cancels out})$$

Example 4

The price of a bag of local rice increases from GH¢300 to GH¢400 and the quantity demanded falls from 400 bags to 300 bags. Use the midpoint formula to calculate the price elasticity of demand and interpret your answer.

Solution

$$\text{PED} = \frac{[(300-400)/(300+400)/2]}{[(400-300)/(400+300)/2]}$$

$$\text{PED} = \frac{[-100/350]}{[100/350]} = -1 = |-1| = 1$$

We take the **absolute value**, so **PED = 1**

Interpretation: A PED of 1 means unitary elasticity. This implies that the percentage change in quantity demanded is exactly equal to the percentage change in price. When PED = 1 (unitary elasticity), **total revenue** (income) **remains the same**.

Activity 1.3 PED Calculator - Analysing Ghanaian Business Decisions

1. Work in pairs (mix genders where possible)
2. Follow each step-by-step
3. Show all your working clearly in your notebook
4. Discuss your findings with your partner

Business Scenario: Read this scenario carefully and perform the tasks that follow.

Mama Adjoa's Kelewele Stand

Mama Adjoa sells kelewele at Kaneshie Market. Last month, she increased her price by GH¢3 from an initial price of GH¢5 per cup, due to the rising cost of plantain. In effect, her daily sales dropped by 37.5% from an initial sale of 80 cups.

Answer these questions

1. In your notebook, write the two PED formulas you will use:

Percentage Formula: PED = _____

Midpoint Formula: PED = _____

2. Create a table like this and fill in Mama Adjoa's data:

Variable	Original (P ₁ , Q ₁)	New (P ₂ , Q ₂)
Price per cup		
Quantity sold daily		

Note: To get Mama Adjoa's New quantity, you will find the percentage drop, thus, 37.5% of 80.

3. **Calculate PED using the Percentage Method:** Complete this working table:

Calculation Steps	Show your working here	Answer
% Change in Quantity = $(Q_2 - Q_1) / Q_1 \times 100$		
% Change in Price = $(P_2 - P_1) / P_1 \times 100$		
PED = % Change in Qty ÷ % Change in Price		
Absolute Value of PED		

4. Calculate PED using the Midpoint Method

Complete this working table

Calculation Steps	Show your working here	Answer
Midpoint Quantity = $(Q_1 + Q_2) \div 2$		
Midpoint Price = $(P_1 + P_2) \div 2$		
Change in Quantity = $(Q_2 - Q_1)$		
Change in Price = $(P_2 - P_1)$		
PED = $(\text{Change in Qty} \div \text{Midpoint Qty}) \div (\text{Change in Price} \div \text{Midpoint Price})$		
Absolute Value of PED		

5. Based on your PED calculations, answer these questions:
 - a. Is demand for Mama Adjoa's kelewele elastic, inelastic or unitary elastic?
 - b. Did Mama Adjoa's total daily revenue increase or decrease after the price change? Show your calculation.
 - c. Should Mama Adjoa keep the new price or return to the old price? Explain your reasoning using the PED results.
6. Exchange notebooks with another pair and;
 - a. Check their calculations for accuracy
 - b. Suggest any one improvement or correction

Summary: PED calculations help business owners predict how price changes will affect their sales and revenue, enabling smarter pricing decisions.

When PED is greater than 1: elastic; less than 1: inelastic; exactly 1: unitary.

CALCULATION OF INCOME ELASTICITY OF DEMAND

Welcome back to studies! As Ghana's economy grows and people earn higher incomes, their buying habits change. Businesses, individuals and the government can use the information derived from elasticity concepts to make better decisions.

For example, farmers may decide to grow more rice and less cassava since income levels have increased for workers, and they turn to demand more rice and less gari. Also, a family in Kumasi that used to buy small sachets of cooking oil might start buying large bottles of vegetable oil once they get better-paying jobs. In another instance, a student who used to take a trotro to campus every day might switch to using Bolt or a private car after getting a job and earning more.

Therefore, understanding income elasticity helps to explain why some products have higher demand as consumers become richer and why others decrease in demand over time.

Income Elasticity of Demand (YED)

The ratio of the percentage change in quantity demanded to the percentage change in income.

Percentage formular (YED) = [(% change in quantity demanded) / (% change in income)]

Midpoint formula: $YED = [(Q_2 - Q_1) / ((Q_1 + Q_2) / 2)] \div [(Y_2 - Y_1) / ((Y_1 + Y_2) / 2)]$

$$YED = \frac{[(Q_2 - Q_1) / (\frac{Q_2 + Q_1}{2})]}{[(Y_2 - Y_1) / (\frac{Y_2 + Y_1}{2})]} \quad \text{or}$$

$$YED = \frac{[(Q_2 - Q_1) / (Q_1 + Q_2)]}{[(Y_2 - Y_1) / (Y_1 + Y_2)]} \quad (\text{the 2 cancels out})$$

The **coefficient of elasticity** can be interpreted as Positive (**YED > 0**) for a Normal good. If the coefficient is Positive but Greater than 1, then the commodity is a Superior or Luxury good. Also, if the coefficient is **Negative**, the commodity is an **Inferior good**. If the coefficient is Positive but less than 1 (**0 < YED < 1**), the commodity is a Necessity.

Example 5

The income of a female security personnel increased from GH¢2,500 to GH¢3,000. As a result, her monthly consumption of yoghurt increased from 25 cups to 35 cups. Calculate the Income Elasticity of Demand (YED) using the percentage change formula.

Solution

$$YED = \frac{\% \Delta Q}{\% \Delta P}$$

Step 1: Percentage change in quantity demanded

$$\frac{35-25}{25} \times 100 = \frac{10}{25} \times 100 = 40\%$$

Step 2: Percentage change in income

$$\frac{3000-2500}{2500} \times 100 = \frac{500}{2500} \times 100 = 20\%$$

$$YED = \frac{40\%}{20\%} = 2.0$$

Interpretation

A YED of 2.0 indicates that yogurt is considered a Normal good. Since YED is greater than 1, demand is income elastic; an increase in income results in a proportionately larger rise in demand. Therefore it is luxury type of a normal good in this context.

Example 2

A consumer's income rises from GH¢2000 to GH¢2,500. As a result, their monthly demand for gari increases from 11 kg to 12 kg.

Calculate the Income Elasticity of Demand (YED) using the midpoint formula.

Solution

$$YED = \frac{[(Q_2 - Q_1) / (Q_1 + Q_2)]}{[(Y_2 - Y_1) / (Y_1 + Y_2)]}$$

$$YED = \frac{[(12-11)/(11+12)]}{[(2500-2000)/(2000+2500)]}$$

$$YED = \frac{[\frac{1}{23}]}{[\frac{500}{4500}]} , YED = [\frac{0.043}{0.11}] = 0.387$$

Interpretation

A YED of 0.33 indicates that gari is a Normal good. Specifically, it is a necessity.

Since YED is less than 1, demand is income inelastic, meaning that as income rises, demand increases but by a smaller proportion.

As a student, do you agree that gari can be a necessity? Debate.

Activity 1.4 Understanding Income Changes in Ghanaian Households

This activity helps you to calculate and interpret the income elasticity of demand using real Ghanaian household scenarios to understand how spending patterns change when people's incomes change.

Materials Needed

- Notebook or exercise book
- Pencil or pen
- Calculator (if available)

Instructions

1. Work in pairs (mix genders where possible)
2. Follow each step-by-step
3. Show all your working clearly in your notebook
4. Discuss your findings with your partner

Scenario: Read this scenario carefully and perform the tasks that follow.

The Asante Family's Spending Changes

The Asante family from Kumasi experienced an income increase when Mr. Asante got promoted at his workplace. Their monthly household income increased by 40% from an initial income of GH¢2,000. As a result, their monthly consumption of chicken increased by 75% from an initial 4kg consumption.

Answer these questions

1. In your notebook, write the two YED formulas you know

Percentage Formula: $YED = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in income}}$

Midpoint Formula: $YED = \frac{\frac{Q_2 - Q_1}{(Q_1 + Q_2)/2}}{\frac{Y_2 - Y_1}{(Y_1 + Y_2)/2}}$

2. Create a table like this and fill in the Asante family's data

Variable	Original (Y_1, Q_1)	New (Y_2, Q_2)
Monthly Income (GH¢)		
Monthly Chicken Consumption (kg)		

3. Calculate YED using the Percentage Method by completing the working table below

Calculation Steps	Show your working here	Answer
% Change in Quantity = $(Q_2 - Q_1) / Q_1 \times 100$		
% Change in Income = $(Y_2 - Y_1) / Y_1 \times 100$		
YED = % Change in Qty $\div$ % Change in Income		
Final YED Value		

4. Based on your YED calculation, complete this analysis:
 - a. What type of good is chicken for the Asante family? Support your answer with the YED value you calculated.
 - b. If the Asante family's income increases by another 20%, predict what will happen to their chicken consumption. Show your reasoning.
 - c. If you were a chicken seller in Kumasi, how would you use this YED information to plan your business during economic growth periods?
5. Rank them from most income-sensitive to least income-sensitive.
 - a. Gari (YED = -0.3)
 - b. Mobile phone credit (YED = 0.8)
 - c. Private school fees (YED = 1.5)
6. Exchange your notebook with another pair and;
 - a. verify their calculations
 - b. suggest one correction if needed

Summary: YED analysis helps businesses to understand how economic growth or recession affects demand for their products, enabling better planning and market targeting strategies.

CROSS ELASTICITY OF DEMAND

Business people in Ghana need to understand how their products relate to other products in the market. Understanding complementary goods or substitute goods helps traders to make better decisions in pricing, marketing and product improvement.

Cross Elasticity of Demand (XED) shows how the demand for one product (Good A) changes when the price of another product (Good B) changes.

Cross Elasticity of Demand (XED): The ratio of the percentage change in quantity demanded of one good to the percentage change in price of another good.

Formula:

$$XED = \frac{\% \text{ Change in Quantity Demanded of Good A}}{\% \text{ Change in Price of Good B}}$$

Example

In Ghana, many people consider OMO washing powder and Ariel washing powder as substitutes.

The price of OMO increased from GH¢3.00 to GH¢4.00, leading to an increase in the quantity demanded of Ariel from 900 to 1300 sachets per month. Calculate the Cross Elasticity of Demand (XED) and interpret the result.

Solution

$$XED = (\% \text{ Change in Quantity Demanded of Good A}) \div (\% \text{ Change in Price of Good B})$$

Step 1.

% Change in Quantity Demanded of Ariel (Good A):

$$\frac{1300-900}{900} \times 100 = 44\%$$

Step 2.

% Change in Price of OMO (Good B):

$$\frac{4.0-3.0}{3} \times 100 = 33.3\%$$

Step 3.

$$XED = \frac{44\%}{33.3\%} = 1.3$$

Interpretation

XED = 1.3, which is positive and greater than 1.

This shows that Ariel and OMO are close substitutes in the Ghanaian market.

A rise in the price of OMO causes a more-than-proportional increase in demand for Ariel.

General Interpretation of Results for XED

XED Value	Relationship Between Goods	Interpretation
Positive (XED > 0)	Substitute goods	When the price of B increases, demand for A increases (e.g., Coke and Pepsi).

Negative (XED < 0)	Complementary goods	When the price of B increases, demand for A decreases (e.g., phones and phone batteries).
XED = 0	Unrelated goods	A price change in Good B does not affect the demand for Good A.

Activity 1.5 XED Detective - Analysing Product Relationships in Ghanaian Markets

Materials Needed

- Notebook or exercise book
- Pencil or pen
- Calculator (if available)

Instructions

1. Work in pairs (mix genders where possible)
2. Follow each step-by-step
3. Show all your working clearly in your notebook
4. Discuss your findings with your partner

Scenario: Read this scenario carefully and perform the tasks that follow

Trotro vs. Uber Competition in Accra

In Accra, when trotro fares increased from GH¢2 to GH¢3 per trip due to fuel price increases, the number of Uber rides booked daily in the same areas increased from 500 rides to 650 rides.

Answer these questions

1. In your notebook, write the two XED formulas you know

Percentage Formula: XED = _____

Midpoint Formula: XED = _____

2. Create this table in your notebook and identify the products and data

Variable	Product A (Uber)	Product B (Trotro)
What changed?	Quantity demanded	Price
Original value		
New value		

3. Complete the table below by calculating XED using the Midpoint Method.

Calculation Steps	Show your working here	Answer
Midpoint Quantity (Uber) = $(Q_1 + Q_2) \div 2$		
Midpoint Price (Trotro) = $(P_1 + P_2) \div 2$		
Change in Quantity = $(Q_2 - Q_1)$		
Change in Price = $(P_2 - P_1)$		
XED = $(\text{Change in Qty} \div \text{Midpoint Qty}) \div (\text{Change in Price} \div \text{Midpoint Price})$		
Final XED Value		

4. Based on your XED calculations, complete this analysis
 - a. Are Uber and trotro substitute goods or complementary goods? Explain using your XED value.
 - b. What does this XED value tell you about how closely these transport services compete with each other?
 - c. If you were managing Uber in Accra, how would you use this XED information during periods when trotro fares are likely to increase?
5. Analyse these other pairs of Ghanaian products and predict whether their XED would be positive or negative

Product Pair	XED Sign (+/-)	Relationship Type	Reasoning
Gari & plantain			
Mobile phone & phone credit			
Kelewele & bofrot			
Car & petrol			

6. Share your answers with another pair in the class.

FACTORS THAT AFFECT THE ELASTICITY OF DEMAND

Availability of Substitutes

If other products can be used in place of a good, then the demand is more elastic. This means that an increase in the price of one of the commodities will result in an increase in the demand for the other. Consumers can easily switch to the other.

Example: If the price of Fan Milk yoghurt becomes too high, consumers may switch to cheaper local brands like “Sobolo”. In this case, demand is elastic because substitutes are available.

Necessity vs Luxury

Necessities are goods consumers cannot do without. Their demand is inelastic. However, luxuries are goods consumers can live without; therefore, their demand is elastic.

Example: Water is a basic need for every Ghanaian household. Even if the price goes up, people will still buy it. So, water has an inelastic demand. Designer clothes, on the other hand, are luxuries. If the price increases, most people will stop buying or reduce the quantity they buy. Demand, therefore, becomes elastic.

Proportion of Income Spent on the Good

If a product takes up a large portion of a person’s income, demand for that product is usually more elastic. If it takes up only a small amount, demand is less elastic.

Example: Buying a brand-new refrigerator costs a lot of money. If the price increases, many Ghanaians will reduce their demand for it. They will look for cheaper options like second-hand or home-used fridges, making their demand elastic. A box of matches is very cheap and takes up only a small proportion of the consumer’s income. Even if the price rises, people will still buy it. Demand for a box of matches becomes inelastic.

Time Period

In the short run, demand is often inelastic because people do not have time to adjust to changes in price. In the long run, demand becomes more elastic because people can find other alternative commodities.

Example: If electricity tariffs increase in the short run, households will continue to use electricity because they cannot immediately switch to other sources, but in the long run, they may install solar panels, making the demand for electricity elastic.

The Definition of the Market

The narrower the market (for a specific product or brand), the more elastic the demand. The broader the market (general product type), the less elastic the demand. Example: If the price of “Ama’s Special Kenkey” increases, people can easily switch to “Kwame’s Kenkey” next door. So, demand is elastic for a specific brand. But if the price of kenkey in general increases, consumers may still buy it because it’s part of their regular diet, especially in areas like Accra or Tema. So, demand is less elastic.

Habit of consumers

When consumers develop a strong taste or likeness for a particular commodity or service, demand becomes more inelastic. However, if consumers do not like or have no strong taste for a particular commodity, the demand for that commodity becomes elastic.

Example: Some men in Ghana consume alcoholic beverages every weekend. When the price of alcoholic beverages increases, regular consumers will still buy even though it becomes expensive. Demand becomes inelastic because of the habit of the consumers. On the other hand, demand for alcoholic beverages can become elastic when the consumers are not addicts. They can stop their patronage when prices increase.

Durability of the Commodity

When a commodity is durable, its demand tends to be more elastic because consumers can postpone its purchase when the price rises. However, if a commodity is non-durable, demand becomes inelastic since it must be purchased frequently.

Example: When the price of furniture increases, consumers can delay buying it, making demand elastic. On the other hand, goods like bread must be bought regularly, so demand becomes inelastic.

Activity 1.6 Exploring the Factors Affecting Elasticity of Demand

Purpose of the Activity: This activity helps you to identify and analyse the key factors that determine elasticity by examining real business situations in a Ghanaian provision shop context.

Materials Needed

- Notebook or exercise book
- Pencil or pen

Instructions

1. Work in pairs (mix genders where possible)
2. Read the scenario carefully
3. Complete the tasks in your notebook

Business Scenario: Read this scenario carefully and perform the tasks that follow.

Akwasi's Provision Shop Insights

Uncle Elikem operates a busy provision shop in Keta and has made these observations:

Bottled Water: Price increases don't reduce sales much - customers have no alternatives nearby.

Sugar: When prices rise, customers switch to honey or buy less.

Mobile Airtime: Sales stay the same even with price increases - people need to communicate.

Luxury Biscuits: Price increases cause big drops in sales - customers see them as unnecessary.

Cooking Oil: Sales drop during lean months but stay stable during harvest season.

Bread: Initially, customers keep buying, but after months, they find cheaper alternatives.

Answer these questions

- Complete this table by matching each product to the correct elasticity factor

Elasticity Factor	Product Example	Why This Factor Applies
Availability of Substitutes		
Necessity vs Luxury		
Proportion of Income		
Time for Adjustment		

- Elasticity Prediction: For each product, predict if demand is ELASTIC or INELASTIC and explain why:

- Bottled Water: _____ because _____
- Mobile Airtime: _____ because _____
- Luxury Biscuits: _____ because _____
- Sugar: _____ because _____

- Uncle Elikem asks for your help because you are an Economist. What should he do in each of the following situations? Your answers should reflect your understanding of the elasticity of each good.

- His cooking oil supplier wants to increase prices by 20%
Your advice: _____
- A competitor opens nearby, selling cheaper sugar
Your advice: _____

- c. He wants to increase luxury biscuit prices to earn more profit

Your advice: _____

Summary: Understanding elasticity factors helps business owners to predict how customers will react to price changes; hence, businesses are able to make better pricing decisions.

IMPORTANCE OF ELASTICITY OF DEMAND

Elasticity of demand is not just a theory. It helps consumers, businesses and the government to make better decisions. It tells how people react when prices, income or the prices of related goods change. This helps in setting prices, creating fair taxes, planning for exports and fighting poverty. Elasticity as a concept is beneficial in the following ways.

Price Determination

Price elasticity of demand helps producers to know how to set prices for their commodities. If producers increase prices and consumers reduce their consumption or stop buying, demand is elastic for that commodity. In this case, the supplier will either reduce his prices to gain more customers or maintain the initial price to keep the customers. On the other hand, transport operators (like trotro drivers) know that increasing the fare regularly will make the passengers complain, but they cannot stop patronising their services completely. In this situation, the demand for a trotro is inelastic.

Government Revenue and Taxation Policy

The government uses the knowledge of the elasticity of demand in imposing taxes. Goods with inelastic demand have higher taxes because consumers will continue to buy even when prices increase. Example: If the government of Ghana (Ghana Revenue Authority) imposes a tax on items like petrol, alcohol and tobacco, their price will increase in the market, but consumers will still buy them. This leads to an increase in government revenue.

Income Distribution and Social Welfare

Elasticity helps policymakers understand how price changes affect low-income households. This can guide decisions on subsidies or price controls. For example, if the price of rice or maize increases, low-income families suffer the most because they spend a lot of their income on food. Since demand for food is inelastic, the government may subsidise fertiliser or offer school feeding programs so that even low-income families can afford basic needs.

Producer Revenue and Export Planning

Producers can use the understanding of elasticity of demand to predict how price changes will affect their income, especially when selling to foreign markets. For example, cocoa farmers in Ghana depend on world market prices. If the demand for cocoa is inelastic, a fall in price will lead to low producer revenue, even though world demand will remain the same. But if pineapples or shea butter have an elastic demand on the international market, reducing prices slightly could increase exports and revenue.

Market Structure and Competition Analysis

Cross elasticity of demand helps determine how easily consumers can substitute one good for a related good in a competitive market. For example, in Ghana's telecom industry, people often switch between MTN and Telecel when data or call prices change. This is cross-price elasticity and shows the competitive nature of the two service providers.

Inflation Management

Goods with inelastic demand often lead to inflation because even when prices increase, consumers still buy them. Government uses this idea to guide which goods to tax, subsidise or regulate in the market. For example, when fuel prices increase in Ghana, it affects transportation and food prices. Since people cannot stop buying fuel, demand remains the same, leading to inflation. What about water and electricity consumption in Ghana? Do you see any connection? Government therefore regulates the prices of petrol, electricity, water, etc.

Agriculture and Industrial Policy Planning

Understanding the elasticity of demand helps the government decide which sectors need help and how quickly they can respond to changes in prices. For example, if tomato farmers in Ghana can grow more tomatoes when prices rise, it shows the supply is elastic. So, the government can invest in storage and roads to help it meet demand and reduce waste. However, if the supply of poultry (chicken) is inelastic and prices rise, it will take a longer time for farmers to produce more. The government may then support with subsidies to boost production over time.

Scale of Output

Elasticity of demand helps firms to determine the appropriate level of output to produce. When demand for a commodity is elastic, a fall in price leads to a large increase in quantity demanded, so firms can increase output to maximise revenue. However, when demand is inelastic, changes in price have little effect on quantity demanded, so firms may not need to expand output significantly. Example: A firm producing soft drinks may increase its scale of output when it reduces prices because demand is elastic and sales will rise significantly. However, for essential goods like salt, demand is inelastic, so increasing output may not lead to a large increase in sales.

Wage Bargaining

Elasticity of demand for labour influences the ability of workers to negotiate for higher wages. When demand for labour is inelastic, employers are more willing to accept wage increases since employment will not fall significantly. However, when demand for labour is elastic, wage increases may lead to a large reduction in employment, weakening workers' bargaining power. Example: Workers with highly specialised skills (such as doctors) have relatively inelastic demand, so they can successfully demand higher wages. However, workers in jobs with many substitutes may face elastic demand, and employers may reduce employment if wages increase.

Activity 1.7: Why Elasticity Matters

Purpose of the Activity: This activity helps you to understand how the elasticity of demand affects important economic decisions and policies in Ghana.

Materials Needed

- Notebook or exercise book
- Pencil or pen

Instructions

1. Work in pairs (mix genders where possible)
2. Read each question carefully
3. Write your answers in your notebook

Answer these questions.

1. Read each example carefully and complete ONLY the last column of this table in your notebook.

Area	Ghana Example	Why Elasticity Matters Here
Pricing Decisions	MTN pricing data bundles & call packages	
Government Taxes	Taxes on fuel, alcohol and tobacco	
Social Impact	Low-income families affected by increase in food price	
Export Planning	Ghana's cocoa exports and world prices	
Market Competition	MTN vs AirtelTigo - customers switch based on prices	

Inflation Control	Rising food and fuel prices in Ghana	
Agricultural Policy	Farmers grow more tomatoes when prices are high	

2. Choose any TWO examples from the table above and explain how they affect your community or family:

Example 1: _____ How it affects us: _____

Example 2: _____ How it affects us: _____

3. Answer these questions in your notebook based on your understanding of elasticity:
- Why should the government consider elasticity before increasing fuel taxes?
 - How does elasticity help MTN decide on data bundle prices?
 - Why do cocoa farmers need to understand price elasticity?

Summary: Elasticity of demand helps to explain how people, businesses and the government respond to price changes in areas like telecommunications, taxation, food, exports and agriculture.

Activity 1.8 Wrap up – From Demand to Elasticity

Purpose: The purpose of this activity is to help you apply all demand concepts from basic definition to elasticity calculations in a real business scenario.

Duration: 45 minutes

Note: Try doing this activity on your own (individual).

Scenario: *Afia's Waakye Business*

Afia runs a popular waakye stand near Kumasi Technical University. She has been observing customer behaviour and collecting data to improve her business decisions.

Market Observations

Base situation: At GH¢8 per pack, Afia sells 100 packs daily

Price change: When she raised prices to GH¢10, sales dropped to 80 packs

Income effect: During exam periods when students receive extra money from parents, demand increases from 100 to 120 packs (assuming 25% income increase)

Substitute effect: When the nearby rice seller increased prices by 30%, Afia's waakye sales increased to 130 packs

Complementary goods: Afia noticed that when she sells more waakye, she also sells more boiled eggs and gari

Answer these questions in your notebook.

1. Define demand using Afia's business
2. Identify factors affecting the demand for her waakye
3. Explain the difference between a change in demand vs. a change in quantity demanded
4.
 - a. Calculate PED when the price increased from GH¢8 to GH¢10
 - b. Calculate YED during exam periods
 - c. Calculate cross-price elasticity between rice and waakye
5. Based on your calculations, advise Afia on:
 - a. Should she increase or decrease prices? Why?
 - b. How can she use elasticity knowledge to maximise revenue?
 - c. What pricing strategy would work for different customer groups?
6. Show your work to your friends or your teacher

EXTENDED READING

- <https://www.youtube.com/watch?v=HHcblIxiAAk>



- <https://www.youtube.com/watch?v=Fc4KIRKM-tQ>



- <https://www.youtube.com/watch?v=ZvvKrhA-Y2M>



- https://www.youtube.com/watch?v=AeF_xnl-gRk



REVIEW QUESTIONS

1. What does the concept of elasticity of demand measure?
2. Why might the demand for a luxury car be more elastic than the demand for maize in Ghana?
3. What does it mean if the price elasticity of demand (PED) is 0?
4. If the price of FanMilk yoghurt increases and the demand for Yogo yoghurt also increases, what does this suggest about the relationship between the two products?
5. Kweku sells locally made sandals at a market in Takoradi. When he increased the price from GH¢40 to GH¢50, he noticed that many customers stopped buying and sales dropped sharply. A nearby seller offering similar sandals at the original price started getting more customers.
 - a. What type of price elasticity of demand is likely shown in Kweku's situation? Use the concept of responsiveness to explain your answer.
 - b. Analyse two factors from the case that may have influenced how buyers reacted to the price change.
 - c. Using critical reasoning and fully justifying your answer, what pricing or sales advice would you give to Kweku based on the concept of elasticity?
6. Kwabena owns a bread shop in Kumasi. Last month, he decreased the price of a loaf of bread from GH¢10 to GH¢9. As a result, daily sales rose from 400 to 500 loaves. He now wants to know if decreasing the price was a good decision.
 - a. Calculate the price responsiveness of demand for bread in Kwabena's shop. What does your result tell you about how sensitive consumers are to changes in price?
 - b. Examine three (3) possible reasons why the demand for bread in Kwabena's shop responded the way it did after the price increase, using relevant factors that affect elasticity.
 - c. Evaluate whether Kwabena's decision to raise the price was a good one based on your PED result and propose a suitable pricing or marketing strategy with a clear economic reason for your recommendation.
7. Afia sells fresh vegetables in the busy Madina market. One morning, she hears on the radio that the government has increased workers' salaries by 10%. Her regular customers, who used to earn GH¢1,000 per month, now have more money to spend. Shortly after, Afia notices that the quantity of vegetables they buy has increased by 5kg, rising from 50kg to 55kg. Curious about this change, Afia wants to understand how an increase in income affects the demand for her goods.

- a. Determine how responsive the demand for fresh vegetables is to the change in income and explain whether they are a normal, inferior or luxury good.
 - b. Analyse why the demand for fresh vegetables increased when income rose and what this tells you about how Ghanaian consumers behave when their income changes.
 - c. Using your YED result, evaluate how Afia can use income elasticity information to plan her stock and pricing strategy if she expects further income increases among her customers. Justify your recommendation.
- 8. In Cape Coast, the price of Omo washing powder was GH¢30 and later increased by GH¢6. After this price change, weekly sales of Sunlight Powder rose by 25%, up from an initial demand of 600 sachets. A retail shop owner is interested in understanding how the change in Omo's price influenced customer preferences between the two products.
 - a. Calculate the cross elasticity of demand (XED) between Omo and Sunlight Powder and interpret your answer.
 - b. Explain two reasons why customers in Ghana may have chosen Sunlight Powder instead of Omo after the price of Omo increased.
 - c. If you were the sales manager for Sunlight Powder, how would you use this situation to increase your sales even more? Outline and explain your strategy.
- 9. Fatima sells bottled fruit juice in Bolgatanga. When she increased the price, her customers quickly switched to buying chilled sachet drinks from other vendors. However, when she raised the price of mineral water, the drop in sales was very small. She is trying to understand why the reactions were different.
 - a. Explain any three (3) possible reasons why people may have stopped buying Fatima's fruit juice more than her mineral water.
 - b. Analyse how the availability of substitutes and the necessity of a product can affect how demand changes when prices go up, using Fatima's situation.
- 10. The Ghana Revenue Authority is planning to increase taxes on soft drinks. Some officers believe this will reduce consumption, while others argue that people will keep buying the drinks no matter the price. They want to use elasticity to guide their decision.
 - a. Discuss three (3) ways in which understanding the elasticity of demand can help the government decide whether to increase taxes on soft drinks.
 - b. Examine how the government might get different results from the tax depending on whether the demand for soft drinks is elastic or inelastic.

SECTION

2

UTILITY



CONSUMER BEHAVIOUR

INTRODUCTION

Have you ever wondered why people switch goods or cut back on spending when prices increase or their income drops? In this section, you will uncover the reasons behind these choices through two powerful ideas, the substitution effect and the income effect. You will also see how simple maths can help explain these everyday decisions. In your earlier studies, you explored utility, that is, the satisfaction people derive from goods and learned that the more people consume, the less joy they get from each extra unit. That was the Law of Diminishing Marginal Utility. Later, you took it further by working out total, average and marginal utility and how they guide consumer equilibrium using utility graphs. Now, you are set to connect it all and explain how real consumers react to changes in price and income, using utility as your lens.

KEY IDEAS

- Economists use mathematical models to show how consumers maximise satisfaction (utility), illustrating how substitution and income effects influence decisions.
- Substitution and income effects explain how consumers adjust their choices when there is a change in prices by switching goods or feeling richer or poorer.
- The income effect shows how a change in a consumer's income (purchasing power) affects what they buy. If a consumer's income increases, they may buy more of normal goods and fewer of inferior goods.
- The substitution effect shows that when a good becomes more expensive, consumers buy cheaper alternatives instead.

UNDERSTANDING SUBSTITUTION AND INCOME EFFECTS IN CONSUMER CHOICES

Introduction

In Ghana, whenever the prices of goods or services change, consumers also change the quantity they buy. This behaviour is explained by two important concepts. These concepts help us understand why consumers may buy more or less of a commodity when prices change, holding all other factors constant. These concepts are the substitution effect and the income effect.

Substitution Effect

The substitution effect happens when consumers stop buying a more expensive commodity and switch to a cheaper alternative as a result of a change in the price. This increases consumers' satisfaction without increasing their spending.

For example, if the price of Cindy rice increases, many families in Ghana might stop buying it and rather increase their demand for local rice like "Anloga rice". This is because the local rice becomes the cheaper option, so they substitute it for the expensive one. Again, if prices of clothes in boutiques in Accra increase, shoppers might choose second-hand clothes "foose" from Kantamanto or Madina markets instead. The substitution effect allows consumers to still enjoy similar goods or services without increasing their spending.

Tip: Have you ever stopped buying something because it got too expensive and chose a cheaper option instead?

Income Effect

The income effect shows how a change in the price of goods affects the quantity consumers buy with their income. When prices decrease, consumers become richer since they can buy more commodities even though their income has not increased. This increases the consumers' satisfaction(utility). This is known as the income effect.

For instance, if the price of maize decreases in the local markets, low-income families can now buy more maize-related food or save money to pay for other services like mobile credit. Even though salaries have not increased, the decrease in prices increases the real incomes of consumers.

Again, if the government reduces electricity tariffs, people may increase their usage of power for refrigeration, ironing and Air conditioning because they feel they have more money left at the end of the month to pay for it. This rise in consumption, caused by an increase in real income, is known as the income effect.

Suppose the telecommunication companies reduce charges on internet data for students on university campuses in Ghana:

- **Substitution Effect:** Students at the University of Ghana may start streaming live football matches instead of going to the DSTV Centre to watch football matches, since mobile data becomes cheaper.
- **Income Effect:** Because they now spend less on data, they have more money to buy other stuff like second-hand clothes.

So, the students' change in what they buy is influenced by both the income effect (feeling richer or poorer) and the substitution effect (switching to cheaper alternatives).

Application in Economic Decision Making in Ghana

The knowledge of income and substitution effects helps

1. Businesses set prices to attract consumers.

Example: In Ghana, telecommunication companies like MTN and Vodafone offer cheaper night data bundles to get more customers to use their services during the night.

2. The government uses taxation and subsidy policies to increase consumption levels in the economy. For example, whenever the government decreases VAT on local food items like gari and rice, they become cheaper, especially for low-income families. This boosts their purchasing power and increases the consumption of local goods.

3. Households to make decisions about their spending habits.

For example, when food prices increase, households in Ghana might reduce how often they buy meat and instead buy more fish to stay within their budget.

Importance of Substitution and Income Effect in Ghana's Development Context

1. Supports the growth and strength of local industries

When people buy more locally made goods instead of expensive imported ones, it boosts local businesses and creates jobs. For instance, choosing locally made clothes like “Smock” (batakari) instead of imported second-hand clothes supports local tailors and textile producers.

2. Promoting equity (Fairness)

Understanding how income affects spending helps the government to support the people who need help the most. The government can grant food subsidies to low-income households that spend more of their income on food.

3. Improving consumer satisfaction and welfare

If people can find cheaper alternatives without reducing their satisfaction, their standard of living improves. For example, a family in Tamale switching from imported rice to local rice might still enjoy their meals while saving money.

Activity 2.1 Choose or Switch?

Objective: To explore how a change in the price of a good influences consumers to switch to a cheaper substitute, illustrating the substitution effect.

Materials Needed (prepare before class)

Each group should create a scenario card and a decision sheet (both can be handwritten or printed).

Scenario Card (Example for Each Group)

You and your groupmates have GH¢10 each for snacks this week. Normally, you all buy meat pie (GH¢5 each). Suddenly, the price of meat pie increases to GH¢8, while bofrot remains GH¢3. Decide how each of you will respond.

Decision Sheet Template

Name	Original Choice (before price change)	New Choice (after price change)	Why did you switch or not switch?
	Meat Pie	Bofrot / Meat Pie	

Instructions (Student-led)

1. Work in groups made up of four members (consider gender and your abilities)
2. Read your group's scenario card together.
3. Fill out the decision sheet based on what each person in the group would do if this happened in real life.
4. Discuss the following questions as a group.
 - a. Who switched and why?
 - b. Who didn't switch and why?
 - c. What does this tell us about how price affects choice?
5. Prepare one sentence as a group to explain the substitution effect in your own words (2 minutes).
6. Share your sentence with other groups in the class.

Activity 2.2 Price Change, Same Income

Objective: To understand the income effect by observing how a change in the price of a good affects what consumers can afford, even when their income remains the same.

Scenario

Imagine that each of you receives a weekly allowance of GH¢30. Last week, a bottle of fruit juice cost GH¢10. This week, the price has dropped to GH¢6, but your allowance is still GH¢30. Now you have an extra GH¢4 – does it make you feel a little

richer even though you have the same allowance? What can you now afford? Will you spend on something you can now afford?

Instructions

1. Work in groups of three members (Consider gender and ability).
2. One of you should read the scenario.
3. Fill in the table below to show what each person could afford before and after the price change.

Group Member's Name	What you could afford before (GH¢10 per juice)	What you can now afford (GH¢6 per juice)	How has your choice changed?

4. Reflect on these questions as a group
 - a. What could you buy before the price changed? What can you buy now?
 - b. Even though your income did not change, did your ability to buy more improve? Why?
 - c. What does this tell you about how price changes affect what people can afford?
5. Write your findings in a sentence and share with other groups.

MATHEMATICAL REPRESENTATION OF SUBSTITUTION AND INCOME EFFECTS

Hicksian decomposition is a way economists break down how people change what they buy when prices change. It involves both the income and substitution effect.

Substitution Effect

This represents the change in quantity demanded resulting from the good becoming relatively cheaper or more expensive, while holding the consumer's utility constant. That is, Consumers substitute for the cheaper good.

Income Effect

This represents the change in quantity demanded resulting from a change in real income or purchasing power, while holding prices constant.

1. If the good is normal, a price fall feels like an increase in income and more is bought.
2. If the good is inferior, the income effect may reduce the quantity demanded.

This is mathematically captured using the **Hicksian Decomposition**:

$$\text{Total Effect} = \text{Substitution Effect} + \text{Income Effect}$$

When the price of good X falls:

1. Original Demand: X_0
2. New Demand after Price Change: X_2
3. Hypothetical Demand (same utility at new price): X_1

Then:

$$\text{Substitution Effect} = X_1 - X_0$$

$$\text{Income Effect} = X_2 - X_1$$

$$\text{Total Effect} = X_2 - X_0$$

Example

Yaw is a shop attendant in Cape Coast. He spends GH¢90 each week on Kenkey (Good X) and Fried Fish (Good Y). Initially, Kenkey costs GH¢9 per ball and Fried Fish costs GH¢6 per piece. After a price reduction, the price of Kenkey drops to GH¢6, while the price of Fried Fish remains at GH¢6.00

Yaw's weekly consumption changes as follows:

Situation	Quantity of Kenkey (X)	Quantity of Fried Fish (Y)
Before the price change	5 balls	5 pieces
After the price change	8 balls	5 pieces
Hypothetical (same utility at new price)	6 balls	5 pieces

Questions

- a. Calculate the Total Effect of the price change on Yaw's consumption of Kenkey.
- b. Calculate the Substitution Effect of the price change.
- c. Calculate the Income Effect of the price change.
- d. In your own words, explain:

- i. What does the substitution effect mean in this case?
 - ii. What does the income effect mean in this case?
 - iii. Which effect was stronger for Yaw?
- e. Suppose Kenkey were an inferior good for Yaw. How would the income effect change?

Solution

Yaw's weekly food budget = GH¢90

Goods: Kenkey (Good X) and Fried Fish (Good Y)

Prices:

- Kenkey drops from GH¢9 to GH¢6 per ball
- Fried Fish stays at GH¢6 per piece

Yaw's Weekly Consumption

Situation	Quantity of Kenkey (X)	Quantity of Fried Fish (Y)
Before the price change	5 balls	5 pieces
After the price change	8 balls	5 pieces
Hypothetical (same utility at new price)	6 balls	5 pieces

- a. Total Effect (TE)

Total Effect = New Quantity - Original Quantity

Calculation: $8 - 5 = 3$ balls

Yaw buys 3 more balls of Kenkey after the price drops.

- b. Substitution Effect (SE)

Substitution Effect = Hypothetical Quantity - Original Quantity

$$= 6 - 5$$

$$= 1 \text{ ball}$$

Yaw buys 1 more ball because Kenkey has become relatively cheaper.

- c. Income Effect (IE)

Income Effect = New Quantity - Hypothetical Quantity

$$= 8 - 6$$

$$= 2 \text{ balls}$$

Yaw buys 2 more balls because his real income has increased.

Summary

The total increase in Kenkey consumption (3 balls) is made up of

- i. 1 extra ball due to substitution (Kenkey became relatively cheaper)
- ii. 2 extra balls due to income effect (Yaw's real income increased)

This breakdown helps to understand how much of consumer behaviour is driven by relative prices and how much by changes in purchasing power.

Activity 2.3 Budget Dilemma at the Canteen

Objective: To understand how a price increase affects what consumers can afford without a change in income and how this change involves both substitution and income effects, using simple numbers.

Scenario

You and your partner are on a weekly lunch budget of GH¢60. At your school canteen, a plate of jollof rice used to cost GH¢8. You usually bought 7 plates per week. One day, the price of jollof rice increases to GH¢12. You decide to reduce how many plates you buy to stay within your GH¢60 budget. Now, you only buy 5 plates per week. You want to figure out how much of that decrease is due to the jollof becoming more expensive and how much is because your budget cannot stretch as far.

Instructions

1. Work in pairs.
2. From the scenario, write down:
 - a. Weekly Income = GH¢
 - b. Price before = GH¢
 - c. Quantity before =
 - d. Price after = GH¢
 - e. Quantity after =
3. Determine the total change in quantity:
Total change in quantity = After – Before =
4. Break It Down (Estimate the Two Effects):
 - a. Now use logic or rough estimates to divide the total change in quantity.
 - i. Substitution effect (You bought fewer because it became more expensive): _____ plate(s)
 - ii. Income effect (You feel poorer and can't afford as much): _____ plate(s)

NB: (The two numbers should add up to -2)

5. Discuss these questions with your partner:
 - a. Why does a price increase make you feel like your income is not enough?
 - b. How does this change in price affect your ability to buy other things (like water or fruit)?
 - c. What does this teach us about how people behave when prices go up, but income stays the same?
6. Write down your findings in a short paragraph and share them with other pairs.

Activity 2.4 Exploring the concept of utility

Objective: Exploring how consumers make choices by calculating utility, identifying equilibrium and applying the substitution and income effects to real-life price changes.

Scenario: You and your partner are big fans of fried yams from the school canteen. To study how satisfaction works in economics, you are going to act like consumer researchers, tracking how much satisfaction (utility) each plate gives and how your choices change with price or income.

Instructions

1. Work in pairs by considering gender where possible.
2. Estimate your utility
 - a. Imagine you ate one plate of fried yams, then a second, third and so on.
 - b. Fill out the table with estimated satisfaction from each plate. Start by imagining how satisfying one plate of fried yams would be, then estimate the marginal utility (MU) for each. It is going to be high to start with, 20 for example, then might decrease by 5 after each plate.

Plate Number	Total Utility (TU)	Marginal Utility (MU)	Average Utility (AU)
1			
2			
3			
4			
5			

3. Use these formulas to determine your overall and average satisfaction from each plate.

- $TU = MU$ for plate 1 then cumulative for each plate thereafter (plate 2 $TU = MU_1 + MU_2$ and so on)
- $AU = TU \div \text{Plate Number}$

4. Discuss:

- After which plate does MU start to fall?
- When is $MU = 0$? What does that mean?

5. Sketch 3 mini graphs on a blank page:

- Total Utility Curve
- Marginal Utility Curve
- Average Utility Curve

NB: Label axes: Quantity (x-axis), Utility (y-axis)

6. Reach Equilibrium

You have GH¢30. One plate costs GH¢6. That means you can buy a maximum of 5 plates.

- Match the MU for each plate with its price.
- At which plate does $MU = \text{Price (GH¢6)}$?

NB: That is your equilibrium, where you stop buying because satisfaction = cost.

7. Apply Substitution & Income Effects

- Consider these;
 - Price of yam increases to GH¢10 → You now buy fewer plates
 - Price of yam drops to GH¢4 → You buy more plates
- Now discuss this:
 - What other food might you buy instead if yam gets expensive?
 - If yam becomes cheaper, do you feel richer? What else might you buy?
- Then, break this example mathematically: If you ate 5 plates before and now eat 7 (after a price drop), split the 2 extra plates into:
 - Substitution effect = ____ plates
 - Income effect = ____ plates

8. Note: (The total = 2 plates)

- Write one sentence together for each of the following
- What is utility?
- What is diminishing marginal utility?
- How does a consumer reach equilibrium?

- e. What is the income effect?
 - f. What is the substitution effect?
9. Share your findings with other pairs in the class.

EXTENDED READING

- <https://www.youtube.com/watch?v=CEHjYohVaUk>



[youtube.com+11youtube.com+11youtube.com+11](https://www.youtube.com/watch?v=CEHjYohVaUk)



- <https://www.youtube.com/watch?v=3F3aomnhuho>



[youtube.com+2youtube.com+2youtube.com+2](https://www.youtube.com/watch?v=3F3aomnhuho)



- <https://www.youtube.com/watch?v=yqP1FSbS3l0> [youtube.com](https://www.youtube.com/watch?v=yqP1FSbS3l0)



- <https://www.youtube.com/watch?v=STuh3NvLEkY>



[en.wikipedia.org+15youtube.com+15en.wikipedia.org](https://www.youtube.com/watch?v=STuh3NvLEkY)



REVIEW QUESTIONS

1. What is the substitution effect in consumer behaviour?
2. Kwame used to buy 5 juice packs at GH¢10. Now at GH¢5, he buys 8 packs. What is the total change in demand?
3. After the government reduced electricity tariffs in Ghana, some households increased their use of air conditioners and other electrical appliances. What economic concept explains this change?
4. Ama used to buy imported rice but switched to local rice after the price increased. What economic concept does this demonstrate?
5. Yaw normally buys FanMilk yoghurt after school, but recently its price has increased significantly. To manage his pocket money, he has started buying sobolo from a local vendor, even though he prefers yoghurt. Analyse why Yaw switched from FanMilk yoghurt to sobolo
6. Abena's family used to spend most of their income on imported rice. After the government reduced import taxes, the price of imported rice dropped sharply. Her family now buys more imported rice and still has money left to buy more fish and vegetables.
 - a. Discuss how the fall in price changed the family's buying decisions and what new things they were able to afford with their money.
 - b. Analyse the reasons behind the change in Abena's family's buying habits after the price of imported rice went down.
7. Ama is a university student who spends her monthly allowance of GH¢120 on two goods: packs of fruit juice (Good X) and meat pies (Good Y). The price of fruit juice falls from GH¢10 to GH¢6 per pack, while the price of meat pies remains at GH¢6. Her preferences and total spending remain the same.
 - a. How many more packs of fruit juice can Ama now buy with the same budget after the price reduction, assuming she initially spent all her allowance equally on both goods?
 - b. Analyse how Ama's purchasing decision might change after the price of fruit juice decreases.
 - c. Using the Hicksian method (mathematical representation), break down Ama's total change in the quantity of fruit juice consumed into the substitution effect and income effect. Assume she initially bought 6 packs of fruit juice per month and now consumes 10 packs after the price change. Explain what each effect represents in her decision-making process.
8. Mawusi is a university student who receives a monthly allowance of GH¢300. She enjoys eating fried yams and drinking sobolo after lectures. In her first week of classes, she bought fried yams every day and found them satisfying. However, as the days passed, her excitement for fried yams dropped. One

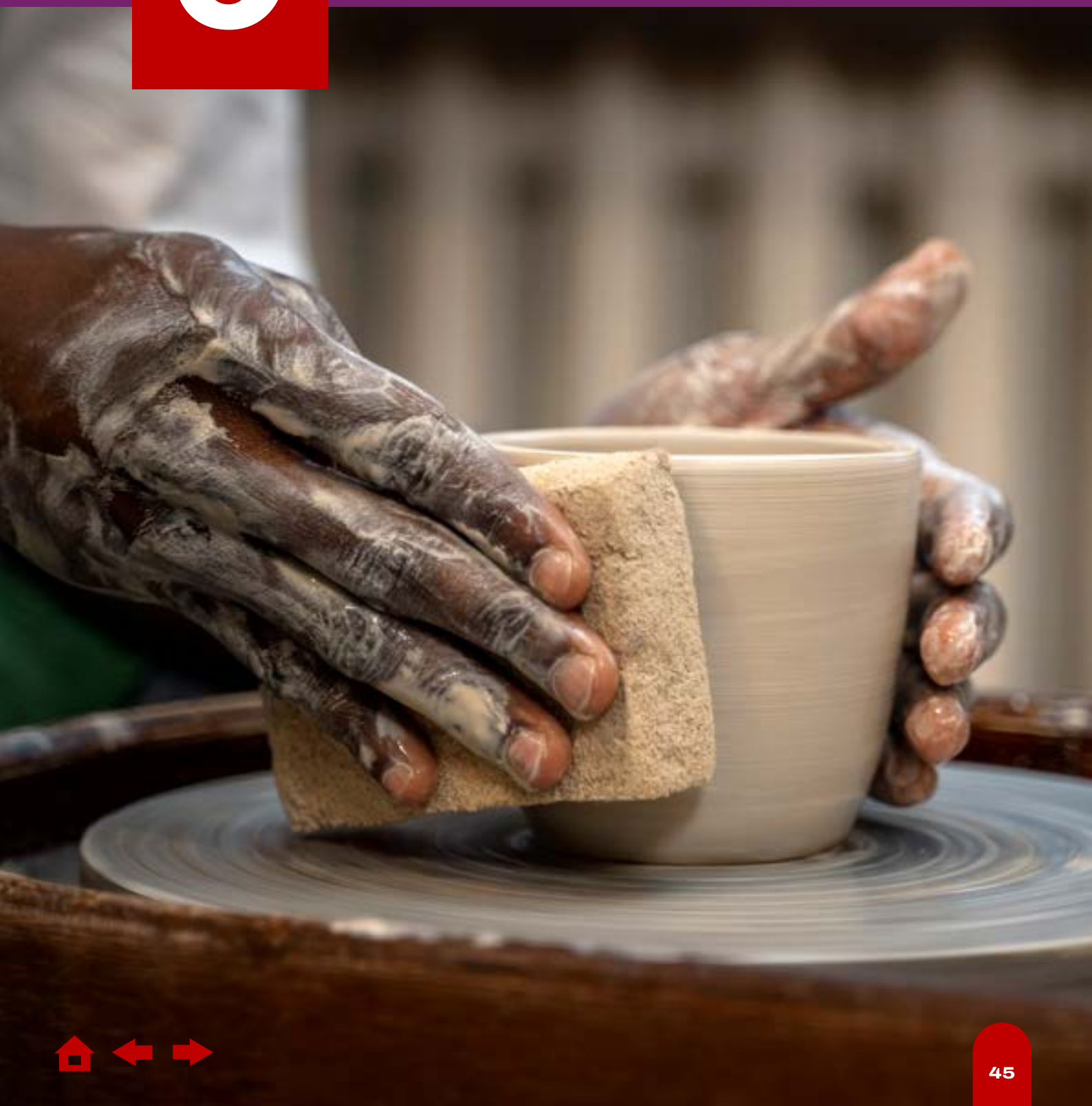
weekend, the price of sobolo decreased in her area. With the same GH¢300, Mawusi started buying more sobolo and slightly reduced her purchase of fried yam. She also made a table to track how much satisfaction she gained from sobolo and calculated the total, marginal and average utility from each extra cup she drank.

- a. Define utility as related to Mawusi's situation.
- b. Use Mawusi's experience with fried yams to explain the law of diminishing marginal utility.
- c. If Mawusi's marginal utility from sobolo is now equal to the price she pays for each cup, analyse her consumption at this price.
- d. Using Mawusi's situation, evaluate how the decrease in the price of sobolo affected her spending using both substitution and income effects. Support your answer with a breakdown of total change into substitution and income effects using any assumed numbers. (You can make your own assumptions to answer part d; however, as an alternative, use the figures listed below.
 - Original price of sobolo: GH¢4 per cup
 - New price of sobolo: GH¢2 per cup
 - Initial purchase: 20 cups = GH¢80
 - After price drop: 30 cups = GH¢60
 - Extra 10 cups purchased: GH¢20 difference
 - Assume 6 of the 10 extra cups were due to switching from fried yams
 - The remaining 4 cups are due to extra money available from price savings.

SECTION

3

FIRM AND INDUSTRY



Production of Goods and Services

INTRODUCTION

Get ready to step into the world of real business decisions! In this section, you will learn how firms grow or face challenges through economies and diseconomies of scale, discover how firms and industries reach equilibrium, explore different business objectives and examine how price discrimination operates in real markets. You have already explored how businesses choose where to locate, how they organise their resources and what makes production efficient. You have tackled ideas like the factors of production, specialisation and how costs and revenues affect decision-making. All of these give you the tools to understand how real firms grow, compete and sometimes struggle in the market. Now it is time to bring everything together and see how firms make smart (or risky) decisions in real markets using what you have learned!

KEY IDEAS

- A firm is in equilibrium when it produces at an output level where marginal cost equals marginal revenue, and it has no incentive to adjust production, even if it's earning zero, positive, or negative profit.
- An industry reaches equilibrium when the total amount producers are willing to supply matches the amount consumers want to buy at the market price.
- Comparing economies and diseconomies of scale helps firms decide the ideal size for growth by weighing cost savings against rising costs from growing too large.
- Economies and diseconomies of scale show how increasing a firm's output can either reduce or raise average costs depending on how growth is managed.
- Firms set different goals such as making profits, expanding operations or gaining market leadership based on their overall business objectives.
- Price discrimination is when a firm charges different customers different prices for the same product based on factors like time, income or location.

ECONOMIES OF SCALE

Economies of scale are the cost advantages a business enjoys when it increases production. As a firm produces more goods, the average cost per unit decreases. This happens because some costs, such as rent, salaries or electricity, among others, are spread across increasing outputs. This simply means that when a business grows and produces more, it becomes cheaper to produce each product if the business is managed properly.

Types of Economies of Scale

As a business grows, it can enjoy lower costs per unit. These cost savings are called economies of scale, and they can come from within the business (internal) or from outside (external).

1. Internal Economies of Scale

Internal economies of scale are cost advantages or cost savings enjoyed by a firm as a result of an increase in its scale of production, arising from factors within the firm. As the firm expands, it becomes more efficient and reduces its average cost of production.

These cost advantages that come from within the firm include:

a. Technical Economies

Big firms can afford better machines and technology, which help them produce faster and at a lower cost. For example, Ghacem, a large cement company in Ghana, uses advanced equipment that small cement producers in Ghana cannot afford.

b. Managerial Economies

Large companies can hire specialists and experts to handle different departments like finance, production or marketing. This improves efficiency. For example, Unilever Ghana employs professionals to manage its operations efficiently.

c. Purchasing Economies

Big firms buy raw materials in bulk, which helps them get discounts from suppliers. For example, Kasapreko, a beverage company, buys bottles, caps and labels in large quantities at lower prices.

d. Marketing Economies

Larger businesses can advertise to a wider audience at a lower cost per customer. For example, MTN Ghana can run nationwide ads, while a small network provider in Ho may only advertise locally and spend more to reach a consumer.

e. Financial Economies

Banks trust bigger and stable firms more than smaller firms and as a result, they offer loans with low interest rates to the bigger firms. For example, GCB Bank can give loans at cheaper interest rates to Kasapreko Company Limited than a small clothing shop in Kumasi because Kasapreko Company is seen as more reliable.

f. Welfare economies

A large firm can provide better working conditions for its workers, such as good salaries, health services, and safe workplaces. This improves worker motivation and productivity, which reduces the cost of production.

g. Research economies

Big firms can afford to invest in research and development. This helps them discover new methods of production, improve product quality, and reduce waste, leading to lower costs.

2. External Economies of scale

External economies of scale are cost savings advantages that come from outside the firm. These happen when many firms are in the same industry or located in the same area.

Examples in Ghana:

a. Pool of skilled labour

When many firms in the same field operate in the same area, it is easy to hire skilled workers. This will reduce the training cost of companies. For example, in Suame Magazine (Kumasi), where many vehicle repair shops are located, mechanics are always available, so businesses save time and training costs.

b. There is shared infrastructure

Firms in the same area can share roads, water, electricity and storage, reducing individual costs.

For example, in an agro-processing zone in the Eastern Region, different food-processing companies use the same power supply and storage facilities.

c. Support Services

Nearby services such as transport, repairs and suppliers help businesses operate more cheaply and efficiently. For example, on Spintex Road in Accra, many businesses benefit from being close to delivery vans, ICT technicians, packaging suppliers and printing presses.

Scenario

A small sachet water producer in Accra begins by producing 2,000 sachets per day using a manual sealing machine. As sales increase, the owner invests in a high-speed automatic machine and starts producing 20,000 sachets daily. They now buy water treatment chemicals and packaging in bulk at a discount and share distribution trucks with two nearby producers. The cost per sachet drops. This is an example of economies of scale.

Key Benefits of Economies of Scale

Type of Economy	Benefit
Technical	Nestlé Ghana uses automated machines to produce more milk tins at a lower cost.
Managerial	Voltic hires specialists to improve efficiency and reduce waste.
Purchasing	A large cocoa exporter buys sacks in bulk at lower prices.

Marketing	Vodafone runs a nationwide ad campaign, reducing the cost per customer reached.
Financial	A large company gets cheaper loans than a small, unknown business.
External (Infrastructure)	Businesses at Tema Port benefit from shared transport networks.

Activity 3.1 Bottom of Form Recap on Production of Goods and Services

Purpose: The purpose of this activity is to help you connect Year One and Year Two production concepts through a real Ghanaian business story and practice collaborative discussion skills.

Instructions: Work in groups of 4-5 learners.

Read the scenario together and discuss each question as a group.

Prepare short answers to the questions in your notebook.

Each group will share one response with the class.

Scenario: Adinkra Textiles- A Ghanaian Success Story.

Adinkra Textiles is a family-owned business in Kumasi that has grown from a small home-based operation to a successful textile company over the past decade.

When Kofi started the business five years ago, he used his savings (capital), rented a small workshop (land), hired three skilled weavers (labour) and took on the role of manager (entrepreneurship). He paid rent for the workshop, wages to the weavers, interest on a small loan and kept the remaining profit. Kofi chose Kumasi because of its proximity to cotton suppliers and the large market for textiles. Initially, each weaver made complete cloth pieces alone, but productivity was low.

As demand increased, Kofi introduced division of labour - one weaver focused on spinning, another on dyeing and the third on weaving patterns. This specialisation dramatically increased their daily output from 5 pieces to 15 pieces of cloth.

Page 1

Today, Adinkra Textiles operates differently based on time periods. In the short run, they can hire more temporary weavers during festival seasons but cannot expand their workshop space. However, in the long run, they plan to build a larger factory and purchase modern looms.

The business now tracks costs carefully. They pay GH¢2,000 monthly rent (which stays the same regardless of production), GH¢50 per cloth for materials and temporary labour (which increases with each cloth produced), making their total monthly cost the sum of both fixed and variable expenses.

When they sell 100 pieces at GH¢80 each, they earn GH¢8,000 in total revenue. The average revenue per piece is GH¢80 and if they sell one additional piece, their marginal revenue increases by GH¢80.

Page 2

Discussion questions

1. What are the four factors of production Kofi used, and what reward does each factor receive?
2. How did introducing specialisation change the productivity at Adinkra Textiles?
3. Why do you think Kofi chose Kumasi as the location for his textile business?
4. Give one example each of what Adinkra Textiles can change in the short run versus the long run.
5. If Adinkra Textiles produces 50 pieces of cloth in a month, what would their total cost be? [Show your calculation using the formula $\text{Total Cost} = \text{Fixed Costs} + (\text{Variable Cost per Unit} \times \text{Quantity Produced})$]
6. If Adinkra Textiles wants to calculate how much additional revenue they earn from selling one more piece of cloth, which type of revenue concept should they use?

Closure: As a group, share one of your answers with the class.

Activity 3.2 Research on Economies of Scale

Purpose: The purpose of this activity is to help you research and understand how businesses reduce costs through economies of scale, using real examples from Ghana and other parts of the world.

Group Size: 4-5 learners per group

Instructions

Step 1: Group Formation & Role Assignment

- a. Form groups of 4-5 learners.
- b. Assign roles: Researcher, Note-taker, Presenter, Timekeeper, Quality Controller

Step 2: Research Phase Groups research and discuss using textbooks, smartphones or resources available:

- a. What are economies of scale (internal and external)?
- b. Identify two companies (one local Ghanaian, one global) and reflect on these questions.
 - i. Which 5 types of economies of scale do they benefit from?
 - ii. How does this reduce their production costs?
 - iii. How does this improve their market competitiveness?

Step 3: Group Presentations

- a. Each group presents their finding to the class

- b. Other groups should ask one clarifying question

Step 4: Class Synthesis

- a. Highlight connections between internal/external economies.
- b. Relate your findings to the Ghanaian business context.

DISECONOMIES OF SCALE

Diseconomies of scale happen when a business expands too large and its average cost per unit increases. This means the business is no longer enjoying a reduction in cost from expansion. Instead, the cost of producing each unit becomes more expensive.

In simple economic terms, as a company expands beyond a certain level, it faces new problems like poor management, low worker motivation and communication issues. This makes production expensive.

Types of Diseconomies of Scale

1. Internal Diseconomies of Scale

These are the disadvantages that occur within the firm when it becomes too big. They include the following:

a. Managerial Diseconomies

When a business grows, it employs more managers and creates more departments. This can cause slow decision-making and increase the costs of management. For example, a large cocoa processing factory in Tema and branches in other areas, such as Takoradi and Kumasi, may have too many managers. When one branch wants to make a change, it must wait for approval from other branches. This delays production and increases costs.

b. Labour Diseconomies

In large companies, workers may feel ignored or less motivated. This can lead to low productivity, more mistakes and higher costs. For example, at a big clothing factory in Accra, workers feel like no one notices their efforts. They lose interest, work slowly and make more errors. The company then spends more money fixing those mistakes.

c. Technical Diseconomies

Large businesses often use complex machines that are connected to other machines. If one machine breaks down, it can stop the whole production process and increase repair and maintenance costs. For example, a cement company in Takoradi depends on one large machine. When it breaks, the entire factory shuts down. This increases the cost of repairs and maintenance for the company.

d. Communication Diseconomies

As firms grow, they may have many offices and departments. This makes communication slower and harder, causing a delay in decision-making. For example, a bank with branches in Accra, Kumasi and Tamale may struggle to pass messages quickly between branches. This slows down customer service, leading to an increase in costs.

2. External Diseconomies of Scale

These are the disadvantages that come from outside the firm due to many firms operating in the same area. This increases the average cost of production for firms.

Examples are:

- a. Overcrowding and congestion: In an industrial area like Tema, roads become congested. This delays the delivery time of trucks, leading to an increase in fuel costs.
- b. Increase in input prices: When many firms operate in the same area, their demand for raw materials increases, causing an increase in prices of raw materials. This increases the cost of operation of each firm. For example, in Dormaa, where there are many poultry farms, the demand for chicken feed always increases. This increases the price of chicken feed, resulting in an increase in the operation costs for all the poultry farmers.
- c. Environmental Pollution and fines: When too many firms operate in the same area, they cause environmental pollution. Therefore, District Assemblies may impose a pollution and noise levy on each of the firms. This increases business costs for firms. For instance, in Tarkwa, several mining companies release waste into rivers and land. As pollution worsens, the government brings in new environmental laws and fines, making it more expensive for each company to operate.

Scenario:

A fruit juice company in Koforidua started with just 2 workers. They used fresh local fruits and blended juices in a small kitchen to produce fruit juice, which was sold at schools and bus stations. They were making good profits.

As more people got to know their product orders for the juice started increasing and the owner therefore decided to expand the company. She rented a bigger space, bought larger machines and employed 15 new workers.

However, after the expansion:

1. It became difficult to manage all the workers properly.
2. Some workers had no clear duties, so they spent time doing nothing.
3. The quality of the Juice reduced, and customers began complaining about taste and packaging problems.

4. The cost of buying fruits in large quantities increased because many other juice companies in the area were also buying from the same suppliers.

As a result, the average cost per bottle of juice increased, even though they were producing more. This is an example of diseconomies of scale.

Key Causes of Diseconomies of Scale

Cause	Explanation
Managerial Problems	Large firms like Total Energies may face delays in decision-making due to many branches and managers.
Poor Worker Motivation	Workers in shopping malls may feel they are not noticed, and they work with less effort.
High Maintenance Cost	Companies like Aluworks that use heavy machines will spend more on repairs and maintenance.
Communication Breakdown	Large companies with many branches, like GCB Bank, face difficulty in sending information across all branches at the same time.
Increased Regulation	Companies like plastic manufacturers face EPA regulations and compliance costs.
Traffic & Congestion	Firms in Accra Central face traffic congestion, which delays deliveries and increases fuel costs.

Activity 3.3 Understanding Diseconomies of Scale

Purpose: The purpose of this activity is to help you explore what happens when businesses grow too large and learn to identify warning signs through case study analysis.

Duration: 50 minutes

Group Size: 4-5 learners per group

Materials needed: Notebook, Pen, Pencil, Ruler, Manila card (if available)

Instructions:

Step 1: Group Formation & Research Preparation (5 minutes)

- Form groups of 4-5 learners
- Assign roles: Lead Researcher, Case Study Analyst, Discussion Leader, Presenter, Recorder

Step 2: Research & Definition Phase (15 minutes)

Using textbooks, smartphones or available resources:

- Define diseconomies of scale (5 minutes)

- b. Identify and discuss at least three main causes of diseconomies of scale.
e.g., Managerial diseconomies (10 minutes)

Step 3: Case Study Analysis (20 minutes)

Read the MegaMart case study and analyse the questions that follow:

MegaMart's Management Struggles

MegaMart is a large retail chain that expanded rapidly across Ghana. Within five years, it opened over 200 branches and hired thousands of employees. However, profits began to fall despite increasing sales.

Local store managers complained about slow decision-making from the head office. Employees became demotivated due to a lack of recognition and communication breakdowns. Again, there was a duplication of roles, causing inefficiencies and rising administrative costs. Customer service quality also declined across branches. Inventory management became chaotic with frequent stockouts and overstocking.

Questions

1. What types of diseconomies of scale is MegaMart facing?
2. How could the company restructure to reduce these issues?
3. What lessons can other Ghanaian businesses learn from MegaMart's experience?

Step 5: Class Discussion and closure (10 minutes)

Compare your findings and suggest other practical solutions for MegaMart's challenges.

Comparison of Economies and Diseconomies of Scales

Feature	Economies of Scale	Diseconomies of Scale
Meaning	A situation where the cost per unit falls as the firm expands.	A situation where the average cost per unit increases as the firm over-expands.
Effect on Average Cost	It reduces the average cost of production.	It increases the average cost of production.
Impact on Profit	Profit margins increase due to lower costs.	Profit margins may decrease due to higher operating costs.
Business Size	Occurs when a firm expands or becomes larger.	Occurs when a firm becomes too large and difficult to manage.
Causes	Specialisation, buying in bulk, better technology, getting cheaper loans and finance.	Poor management, low worker motivation, overcrowding and poor supervision.
Managerial Efficiency	Management is very easy and organised because every worker knows his/her role.	There is confusion and repetition of roles due to unclear roles.

Workforce Productivity	Workers become more skilled and efficient through repetition.	Workers may feel bored and less motivated and underused.
Examples in Ghana	A local bakery in Accra buys flour and butter in bulk, reducing the costs of baking each loaf.	The bakery expands with many branches in Kumasi and Koforidua but faces difficulty with vehicle maintenance and driver delays.
Communication	Becomes easier with better systems.	Communication slows down as more branches or departments are added.
Customer Service	Often improves due to better facilities and training.	May decline if customer concerns are lost due to delays.
Financial Effect	Leads to a decrease in cost, which helps to save money for improvement in product quality	Leads to an increase in cost, causing the business to struggle.

Example

- A rice processing plant in Tamale buys tractors, dryers and packaging materials in bulk. It becomes cheaper to process each bag of rice.
- As more rice processing plants are established in Aveyime and Asutwae, more workers are employed. Supervision becomes difficult, decision-making delays and production mistakes may occur; this is known as diseconomy of scale.

Activity 3.4 Economies vs Diseconomies of Scale Analysis

Purpose: The purpose of this activity is to help you compare both concepts and develop strategies to help businesses grow efficiently while avoiding common pitfalls.

Duration: 55 minutes

Group Size: 4-5 learners per group

Materials needed: Notebook, Pen, Pencil, Ruler, Manila card (if available)

Instructions

Step 1: Group Formation & Task Division (5 minutes)

Form groups of 4-5 learners

Assign roles: Chart Designer, Case Analyst, Strategy Developer, Presenter, Timekeeper

Step 2: Comparative Analysis (20 minutes)

Create a Venn diagram or comparison table covering:

- Definitions** of economies and diseconomies of scale (5 minutes)
- Main causes** of each concept in 'a' above (10 minutes)
- Effects on average cost** - how each impacts business costs (5 minutes)

Step 3: Case Scenario Analysis (20 minutes) Analyse the CocoaDelight Ghana Ltd.

CocoaDelight Ghana Ltd. (Cocoa-based products)

Background: CocoaDelight started as a small family-owned cocoa processing business in Ghana. Due to rising demand locally and internationally, the company expanded by buying new machines, hiring more workers and building two new production centres in different regions.

In a few months, the bulk purchase of cocoa beans reduced the raw material costs of the company. Modern machines have also increased productivity significantly. The skilled technicians reduced wastage and errors, leading to access to larger markets through multiple locations.

As the company continued its expansion projects, managers began to complain of longer decision-making chains. Some workers reported that they felt disconnected and demotivated. Transportation costs rose due to operations spread across regions. Eventually, quality control became inconsistent between the different locations of the same company.

Questions

- What economies of scale are CocoaDelight benefiting from?
- What diseconomies of scale are starting to appear?
- What advice would you give to maintain efficient growth?

Closure: Each group summarises their findings and shares with the entire class.

EQUILIBRIUM SITUATION IN THE FIRM

A firm is said to be in equilibrium when it has no reason to change the amount of goods or services it produces. This is because it is either making the highest profit possible or minimising loss.

In Ghana, this idea applies to all types of businesses, whether a larger company like Nestlé Ghana or a small business like a bread-baking shop in Kumasi. Each of them aims to reach a point where they are making the highest profit while keeping their cost low.

Conditions for Firm Equilibrium

A firm reaches equilibrium when:

Marginal Cost (MC) = Marginal Revenue (MR)

MC curve cuts MR from below.

This is the point where the firm earns the highest possible profit at the least cost.

Let us break it down:

If $MR > MC$, the firm should produce more, because the extra product brings in more revenue than it costs to make.

If $MR < MC$, the firm should produce less, because producing more would cost more than it earns.

If $MR = MC$, the firm is at equilibrium and profit is at its highest.

It is important to produce at the equilibrium output because at the optimal output level, when a firm is making positive profit, it achieves the highest by producing at the equilibrium output. On the other hand, if a firm is making losses, it makes the least when it produces at the equilibrium output level.

Example:

Nana K. Ofori Limited, a popular dealer and distributor of building and construction materials in Ghana, is in equilibrium when it supplies exactly the number of building materials at the point where the marginal cost is equal to the marginal revenue.

If Nana K. Ofori limited supplies are less than the equilibrium output, its profit margin will be low.

If it supplies more than equilibrium output, the marginal cost is higher than the revenue, leading to losses.

But at $MR = MC$, the firm is at its best output level. Therefore, there is no need to increase or reduce production.

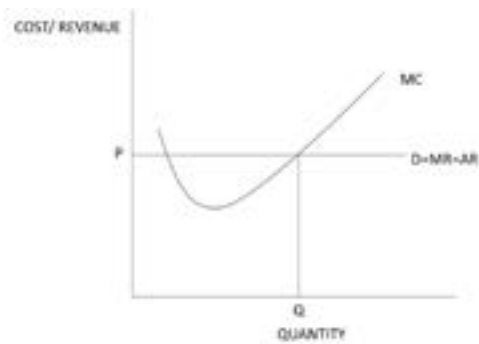
Short-Run Equilibrium Condition

In the short run, a firm can still operate even if it is making losses, as long as it covers its variable costs such as electricity, raw materials and wages.

For example, the tomato processing factory in Techiman may continue production during a season when sales are low, as long as it can pay workers and buy tomatoes. The hope is that in the future, sales will pick up again.

The following graph shows how the equilibrium condition of a firm operates in the short run, under perfect competition. Equilibrium is shown at the point where the revenue curve cuts the cost curve, $MR = MC$.

Short-run equilibrium of the firm

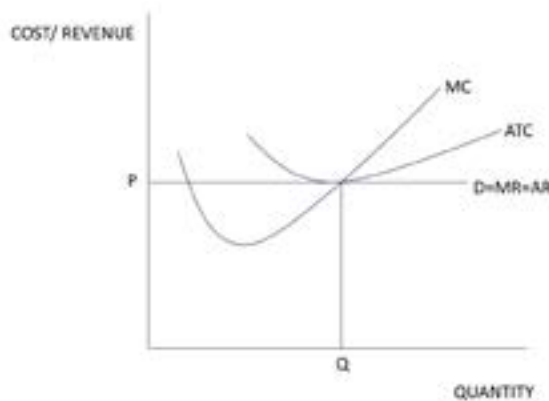


Long-run equilibrium condition

In the long run, all the costs incurred in a business can change, including rent, salaries, equipment and raw materials. This means that, in the long run, the firm can expand or reduce its size, change its production methods or even leave the market.

For a firm to stay in business in the long run, the average revenue must be greater than or equal to the average total cost ($AR \geq ATC$). This is enough to cover all its costs and allow production to continue.

If AR is less than ATC ($AR < ATC$), the firm is making losses. It must therefore shut down and exit the market. This is shown in the graph below. Note that AC is interchangeable with ATC



Activity 3.5 Understanding Firm Equilibrium

Purpose: The purpose of this activity is to help you understand firm equilibrium and practice explaining economic reasoning through talk for learning approaches.

Duration: 50 minutes

Instructions

Step 1: Individual Definition (5 minutes)

- a. Write down a definition of «firm equilibrium» in your own words
- b. Think about the situation when a firm has found the best production level

Step 2: Partner Sharing (5 minutes)

- a. Turn to a partner and explain your definition out loud
- b. Listen carefully to your partner's definition

Step 3: Think-Pair-Explain Scenario (20 minutes)

Scenario: A firm is producing 200 units of a commodity at a cost of GH¢4 per unit and selling them at GH¢6 per unit.

a. **Given the information below**

- i. Total Cost (TC) = 200 units $\times$ GH¢4 = GH¢800
- ii. Total Revenue (TR) = 200 units $\times$ GH¢6 = GH¢1,200
- iii. Marginal Cost (MC) = Additional cost of producing one more unit = GH¢4
- iv. Marginal Revenue (MR) = Additional revenue from selling one more unit = GH¢6

b. **Individual Think Time** (5 minutes)

Based on the information above, consider these questions silently:

- i. Should the firm increase or reduce output? Why?
- ii. Is the firm in equilibrium at 200 units?
- iii. What information do you need to confirm equilibrium?
- iv. How do marginal cost and marginal revenue relate here?

c. **Pair Discussion** (10 minutes)

- i. Partner A explains their reasoning for 2 minutes whilst Partner B listens
- ii. Partner B explains their reasoning for 2 minutes whilst Partner A listens
- iii. Discuss and compare your answers (6 minutes)

d. **Class Sharing and closure** (5 minutes)

- i. Summarise what your partner said before sharing your view with the class
- ii. Focus on explaining the relationship between MC and MR in determining equilibrium

Note for the learner: A firm reaches equilibrium when Marginal Cost (MC) equals Marginal Revenue (MR). If $MR > MC$, the firm should increase production. If $MC > MR$, the firm should reduce production.

EQUILIBRIUM OF THE INDUSTRY

An industry is in equilibrium when the forces of supply and demand are balanced, resulting in a stable market price and quantity that show no tendency to change. At this point, the market is stable, and all firms are earning normal profit.

Conditions for Industry Equilibrium

An industry reaches equilibrium when:

1. All firms are in equilibrium, meaning $\text{Marginal Cost (MC)} = \text{Marginal Revenue (MR)}$
2. Firms make normal profit — no abnormal profits or losses
3. Market demand equals market supply, so the price stays stable

Industry Equilibrium in Different Market Structures

Perfect Competition

A perfectly competitive industry has many firms selling identical products, with no single firm controlling the price.

Conditions in long-run equilibrium;

1. Firms are free to enter or leave the market
2. All firms earn normal profit (zero economic profit)
3. $\text{Price} = \text{Marginal Cost (P = MC)}$

Example

At the Tamale Central Market, many sellers offer the same type of groundnuts at similar prices. When profits increase due to high demand during festival periods, more sellers enter. Later, as profits fall, some sellers switch to other goods like beans or millet. Prices stabilise and the remaining sellers earn normal profit.

Short-Run Industry Equilibrium

In the short run, firms may earn supernormal profits or make losses because;

1. Barriers to entry prevent new firms from entering immediately.
2. Some costs (like rent or equipment) are fixed in the short run.

Example:

When the price of maize rises due to inadequate rainfall, maize farmers in Ejura earn supernormal profits. Because it takes time to clear land, buy seeds and grow the crops, not every farmer can quickly switch to maize farming. Therefore, in the short run, only existing maize farmers enjoy the high profits, and new farmers cannot enter the market immediately.

Long-Run Industry Equilibrium

In the long run, the industry is in equilibrium when;

1. All firms in that industry earn normal profit
2. There is no entry and exit of firms
3. Industry supply is equal to industry demand

Example

Over the years, many young people opened barbering salons because it looked profitable. They made supernormal profits at the beginning. As more people joined the business, competition increased. Now, the number of barbering shops is enough to meet customer demand. Most barbers earn normal profit. This shows that the barbering industry is in long-run equilibrium. The point on the graph below where the supply curve meets the demand curve represents normal profits.



Monopolistic Competition

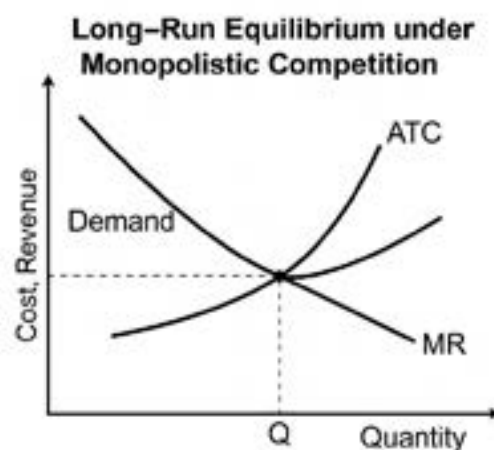
In this case, an industry has many firms selling slightly different products. These products are differentiated through branding and quality.

In the long run, equilibrium leads to the following;

1. Firms in the industry earn normal profits
2. They operate with excess capacity (not at full efficiency)

Example

In **Koforidua**, many bakeries produce bread with different tastes and packaging. Each tries to attract customers. But as more bakeries open, competition increases, prices become stable and all the firms earn normal profits over time. In the graph below, in the long-run equilibrium for a monopolistically competitive firm, the point where the firm's demand curve (AR) is tangent to its Average Total Cost (ATC) curve represents normal profit.

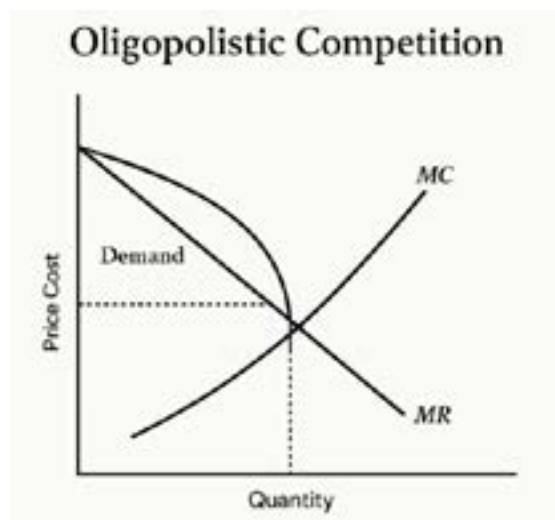


Oligopoly

An oligopoly is a market structure where a few large firms dominate the industry. These firms are interdependent, meaning each one considers the actions of the others when making decisions. Oligopolies have several key characteristics: there are few dominant firms, high barriers to entry that prevent new competitors from joining easily, and price rigidity, where prices do not change frequently even if costs or demand change. Because firms watch each other closely, this interdependence often leads to behaviours like price leadership, where one firm sets the price and others follow, and collusion, where firms secretly agree to fix prices or limit production. Understanding these characteristics helps explain why oligopoly firms behave differently from those in more competitive markets.

Example

Firms like MTN, Vodafone and Telecel dominate Ghana's mobile network industry. While they compete through data bundles and mobile money offers, one firm (usually MTN) often sets pricing trends and the others follow. In the graph below the point where $MC = MR$ defines the profit-maximising output level for each firm. The demand curve shows that firms in the industry must stick with agreed pricing or quantity, or their marginal revenue might fall.



Monopoly

A monopoly is a market with only one firm with barriers to entry.

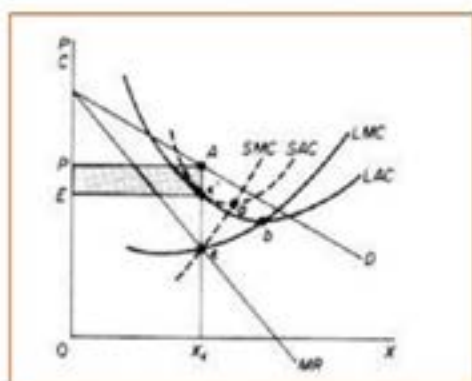
Equilibrium occurs when;

1. The industry maximises profit where $MR = MC$
2. New firms cannot enter due to high barriers

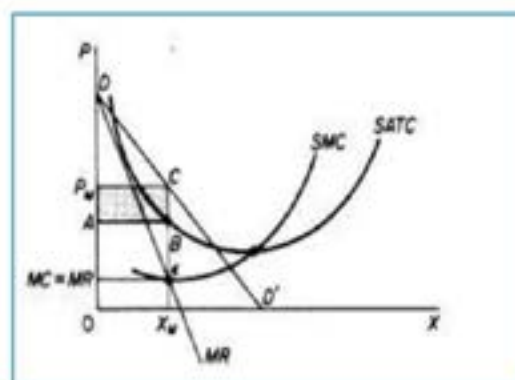
Example

GWCL is the sole provider of pipe-borne water in most parts of the country. Because the operational cost is so high, no other firm competes directly. The company is regulated and sets prices to cover operational costs while serving the public. In the graph below, the regulated price would be below the monopolist's profit-maximising price, possibly closer to average cost (AC). This shifts the equilibrium to the right, increasing output and reducing price. In this situation, the single firm in the water industry may still earn normal profit, but supernormal profit is constrained.

MONOPOLY



In the **LONG RUN** the monopolist has the time to expand his plant, or to use his existing plant at any level which will maximize his profit. With entry blocked, however, it is not necessary for the monopolist to reach an optimal scale (that is, to build up his plant until he reaches the minimum point of the LAC).



The monopolist maximizes **SHORT-RUN** profits if the following two conditions are fulfilled. Firstly, the MC is equal to the MR. Secondly, the slope of MC is greater than the slope of the MR at the point of intersection. The equilibrium of the monopolist is defined by point x , at which the MC intersects the MR curve from below.

How Industry Equilibrium Adjusts Over Time

If an industry is not in equilibrium:

1. Supernormal profits attract new firms into the market, thereby increasing supply and reducing prices until only normal profits remain.
2. Firms exit the industry due to losses, reducing supply and increasing prices until normal profit is earned.

Example

Poultry farming became very profitable in **Dormaa Ahenkro**, attracting many new farmers. Over time excess supply of chickens caused prices of eggs and chicken to drop. As profits reduced, some farmers left the business. Supply was reduced to match demand, where remaining poultry farmers earned normal profit.

Activity 3.6 Understanding Industry Equilibrium

Purpose: The purpose of this activity is to help you understand how entire industries reach equilibrium and practice explaining market dynamics through discussion.

Duration: 45 minutes

Instructions

Step 1: Individual Writing (5 minutes)

- a. Write down what you think an industry is. (2 minutes)
- b. Write what it means for an industry to be in «equilibrium» (3 minutes)

Step 2: Think-Pair-Explain Scenario (15 minutes)

Scenario: In the bottled water industry in Ghana, new firms entered the market because existing companies were making high profits. However, over time, prices dropped and some firms had to exit the market.

- a. **Individual Think Time** (5 minutes)

Think about these questions silently:

- i. What stage of industry equilibrium does this describe?
- ii. What will likely happen to supply, demand and prices next?

- b. **Pair Discussion** (10 minutes)

- i. Partner A explains their thinking for 3 minutes whilst Partner B listens
- ii. Partner B explains their thinking for 3 minutes whilst Partner A listens
- iii. Discuss and agree on your answers, write them in your notebook (5 minutes)

- c. **Class Sharing** (10 minutes)

Share your pair's conclusions with the class when called upon.

Note for the learner: *Industries move towards equilibrium as firms enter when profits are high and exit when profits are low, until normal profits are earned.*

OBJECTIVE OF THE FIRM IN AN INDUSTRY

Firms operate with different goals depending on their size, type of ownership and the market they operate in. In Ghana, firms exist across various sectors like agriculture, manufacturing and services. Their goals are shaped by factors such as economic conditions, government policies, available resources and consumer demand.

Below are the main objectives that firms in Ghana aim to achieve:

1. To maximise profit

Most firms aim to make the highest possible profit. The higher the profits they make, the more the firm expands and the higher the reward to owners or investors. For example, FanMilk Ghana Ltd may increase production of yoghurt during hot seasons to meet high demand and maximise sales revenue.

2. To promote growth and expansion

Firms aim to increase their size, sales, enter new markets and produce new products. Growth may be internal (by producing more) or external (by partnering or merging with others). For example, Kasapreko Company Limited, a beverage manufacturer, may open a new bottling plant in the Ashanti Region and Western Region to increase output. A local bakery in Ho may buy more ovens to produce more bread and serve more customers.

3. To ensure market dominance

Some firms try to become the most popular or biggest in their industry by attracting more customers than competitors. For example, MTN Ghana uses aggressive marketing and wide network coverage to remain the leading telecom company. A cement company like Dangote may reduce prices and advertise heavily to become the top brand in Ghana's construction market.

4. To increase customer satisfaction

Firms aim to meet customers' needs by offering high-quality goods and services, which builds customer loyalty and demand. Satisfied consumers may advertise the product or service by recommending to others. For examples, CalBank uses mobile apps to make banking easier and faster. Also, KFC Ghana offers quick service and consistent food quality to satisfy customers.

5. Social and Community Responsibility

Some firms aim to contribute to society through improvement in infrastructure in areas where they are located even if it does not increase profit in the short term. This is called Corporate Social Responsibility (CSR). For examples, Newmont Ghana, a mining company in Akyem offered scholarship packages for about 10,000 students in Akyem and sponsored TVET and apprenticeship programmes.

6. To create employment

Firms help reduce unemployment by providing jobs, especially in areas where they are located. This helps to reduce unemployment in the country. For examples, a cassava processing factory under 1D1F in Addo-Nkwanta in the Krachi East District employs most people in the area. Similarly, Blue Skies in Nsawam employs a lot of people to process fruits for export.

7. Survival

Firms aim to continue operation even in tough economic times, like high inflation or cedi depreciation and pandemics. They may not aim for high profit but could attempt to cover costs, reduce losses and avoid shutdown. For example, an importer of car

spare parts in Abossey Okai may reduce the number of items imported and cut costs to survive when the dollar rate rises sharply. Again, a private school in Gomoa Potsin may lower school fees or offer flexible payment plans during economic hardship, just to retain students and avoid collapse.

8. Innovation and Efficiency

In order to be competitive, some firms aim to improve their production processes, reduce costs and offer unique products. For example, **Nestlé Ghana** upgraded its Tema factory with automated machines to speed up production of Milo and Cerelac while cutting down costs.

Activity 3.7 Understanding Firm Objectives

Purpose: The purpose of this activity is to help you identify different firm objectives and understand how these goals influence business decisions and strategies through structured discussion.

Duration: 45 minutes

Group Size: 4-5 learners per group

Materials needed: Notebook, Pen, Pencil, Flipchart paper (if available)

Instructions

Step 1: Group Formation & Role Assignment (5 minutes)

- a. Form groups of 4-5 learners
- b. Assign roles: Discussion Leader, Note-taker, Question Coordinator, Presenter, Timekeeper

Step 2: Individual Think Time (8 minutes)

Silently think about and jot down

- a. At least three different objectives a firm might have (3 minutes)
- b. How might these objectives influence business decisions? (5 minutes)

Step 3: Discussion (25 minutes)

Round 1: Firm Objectives & Influence (10 minutes)

- a. Share your list of firm objectives with your group (3 minutes)
- b. Discuss how each objective influences pricing, marketing or services (7 minutes)

Round 2: Industry & Competition Factors (8 minutes) Discuss as a group:

- a. How do industry type, competition and firm size affect business goals?
- b. Give specific examples from Ghanaian businesses you know

Round 3: Small vs Large Firms (7 minutes)

Compare and contrast

- a. How do objectives differ between small local businesses and large corporations?
- b. How might objectives change as firms grow or face more competition?

Step 4: Group Presentations (5 minutes)

Each group shares one key insight from their discussions (1 minute per group)

Step 5: Class Synthesis (5 minutes)

Summarise the main objectives of a firm and the factors that influence them

Discussion Prompts

- i. Think about local businesses: What drives a small chop bar vs. a large company like MTN?
- ii. How might a firm's goals change during economic difficulties?
- iii. What happens when firms face new competitors?

PRICE DISCRIMINATION

Price discrimination happens when a seller charges different prices for the same product or service to different customers. The difference in price is not due to production costs but because of factors like a buyer's income level, age, location or willingness to pay.

It usually happens in imperfect markets, especially in a monopoly or monopolistic competition, where the firm has some control over prices.

Types of Price Discrimination

1. First-Degree Price Discrimination (Perfect Price Discrimination)

Under this, the seller charges each customer the highest price they are willing to pay. This is not common because it requires knowing each person's exact willingness to pay. For example, a private basic school in Accra may charge different school fees to different parents based on their ability to pay. A wealthy parent might be charged GHS 3,000 per term while a low-income parent may be charged GHS 2,000 for the same tuition. This is not because of cost differences, but because the school knows each parent's willingness or ability to pay.

2. Second-Degree Price Discrimination (Quantity-Based)

The price the buyer pays depends on the amount of goods bought or the type of service chosen. Bulk buyers usually get lower unit prices. For example, ECG allows consumers who use less than 50 kWh per month to enjoy a lower rate per unit (lifeline users). Those who use more electricity pay higher rates per additional unit. This is to ensure there is no wastage of electricity.

3. Third-Degree Price Discrimination (Group-Based)

Different groups of customers are charged different prices based on age, location or occupation. For example, **MTN Ghana** sometimes offers location-based discounts

through its “Zone bundles.” Customers in urban areas like Accra may get data at a different price, while those in rural areas may enjoy cheaper rates or special promos. Here, prices vary based on the geographical location.

Conditions for Price Discrimination

For a firm to charge different prices, the following must be present:

1. There must be some level of market power: The firm must have control over pricing (not in perfect competition).
2. The Market must be separated: The firm must be able to divide customers into different market groups with different price elasticities of demand. For example, Hospitals can separate NHIS cardholders from private patients.
3. There should be no possibility for resale: Consumers must not be able to buy at a low price and sell to others.
4. There must be different price elasticities: Firms charge more to people with inelastic demand (less sensitive to price) and less to those with elastic demand (very price-sensitive).

Reasons for Price Discrimination

1. To make more profit by capturing more consumer surplus.
2. To attract low-income groups who cannot afford the full price.
3. To clear excess supply by offering discounts.
4. To reward loyalty or promote social groups (e.g. discounts for students).

Advantages of Price Discrimination

1. It increases revenue for producers, which may help increase production and improve service. For example, ECG uses extra revenue to maintain power lines.
2. To help low-income earners have access to goods.
3. It helps in efficient use of resources during low-demand periods. For example, cheaper night-time electricity promotes off-peak use.
4. It helps to ensure that profits from more profitable areas are used to support the delivery of services in rural or low-income areas. For example, Telecom firms use urban profits to support rural services.

Disadvantages of Price Discrimination

1. It can be seen as unfair, especially if rich people get lower prices.
2. It can lower the benefits consumers receive from a purchase and widen the gap between high-income and low-income groups.
3. Difficult to apply without enough market information.
4. May reduce competition in monopoly markets.

Practical examples

- a. Movie cinemas charging lower ticket prices for students and children compared to adults. For example, Silverbird Cinemas may offer discounted tickets to students who show a valid student ID.
- b. Internet cafés offering cheaper hourly rates in the morning than in the evening.
- c. MTN or Vodafone offering cheaper call/data rates in rural areas than in cities.
- d. Private schools charging different fees based on parent's income or number of children enrolled.

Activity 3.8 Understanding Price Discrimination

Purpose: The purpose of this activity is to help you understand price discrimination, identify its types and conditions and evaluate its advantages and disadvantages through structured discussion and real-world examples.

Duration: 47 minutes

Group Size: 4-5 learners per group

Materials needed: Notebook, Pen, Pencil, Flipchart paper (if available)

Instructions:

Step 1: Group Formation & Role Assignment (2 minutes)

- a. Form groups of 4-5 learners
- b. Assign roles: Discussion Leader, Examples Collector, Note-taker, Presenter, Timekeeper

Step 2: Individual Reflection (5 minutes)

Think silently about:

- a. Have you ever paid different prices for the same product or service? (2 minutes)
- b. Write down what you think price discrimination means (3 minutes)

Step 3: Discuss and share (25 minutes)

Round 1: Definition & Examples (8 minutes)

- a. Share your understanding of price discrimination with your group (3 minutes)
- b. Discuss and agree on a group definition (2 minutes)
- c. Identify Ghanaian examples (e.g., student discounts, cinema tickets, transport fares and such) (3 minutes)

Round 2: Types & Conditions (10 minutes)

Discuss the different types of price discrimination

- d. First degree (perfect):
- e. Second degree (quantity):
- f. Third degree (market segmentation):

Round 3: Advantages vs Disadvantages (7 minutes)

Debate within your group:

- g. Advantages: For businesses and some consumers
- h. Disadvantages: For different consumer groups
- i. Use your local examples to support arguments

Step 4: Group to Group presentation (5 minutes)

Turn to the other group. Each group presents 1 type of price discrimination with a Ghanaian example.

Step 5: Group discussion (5 minutes)

Is price discrimination fair or unfair? Why?

Step 6: Personal reflection (5 minutes)

- a. Why do cinemas charge different prices for students?
- b. How do trotro fares sometimes vary for the same route?
- c. When might price discrimination benefit consumers?

EXTENDED READING

- <https://www.youtube.com/watch?v=o1y92OaoGKA>



- https://www.youtube.com/watch?v=_ikQhuDnDhM



- https://www.youtube.com/playlist?list=PLSQL0a2vh4HDH_siKuIlOhHS89Egh-pnF



REVIEW QUESTIONS

1. Why might a firm focus on growth rather than profit maximisation during its early years
2. What factor is most likely to influence a firm's decision to expand into a new region of Ghana?
3. What are three examples of an internal economy of scale in a business?
4. What could be a likely cause of internal diseconomies of scale in a large manufacturing firm?
5. In the short run, what is most likely to be a fixed factor of production in a firm?
6. Nkate Farms Ltd is an agro-processing company in the Ashanti Region that packages groundnut paste. As the business grew, it bought its packaging machines and trained staff internally. It also benefits from improved rural roads and free training from a local agricultural college.
 - a. Using the case above, identify the internal and external economies of scale and explain how one example of each from Nkate Farms Ltd helps reduce the firm's average cost of production?
 - b. Assuming you are a business advisor to Nkate Farms Ltd, analyse three key factors the company should consider before expanding into the Bono Region. Use evidence from the case study to justify whether the expansion is a workable decision.
7. SuperBread Bakery began as a small shop in Tamale. After early success, it expanded rapidly, opening 10 more branches. However, as the business grew, problems followed. Communication between the owner and branch managers became slow. Workers felt less motivated due to poor supervision. Transporting ingredients between branches raised costs. These challenges caused the average cost per loaf to increase.
 - a. Using the case of SuperBread Bakery, explain two problems the business faced as it grew larger and how these problems affected its cost of production.
 - b. Assume you are a business consultant hired by SuperBread Bakery. Evaluate the challenges the company faced during its expansion and propose three strategies to reduce rising production costs and improve efficiency.
8. AgroFresh Ghana Ltd began as a small fruit processing company in the Eastern Region. As demand grew, the company expanded its operations. It purchased larger machines, hired skilled managers and began buying raw fruits in bulk directly from farmers. These changes helped reduce production costs per unit and increased profits. However, as AgroFresh continued to grow, new problems began to appear. Managers at different branches started complaining about slow decision-making. Employees felt disconnected and unmotivated

due to poor supervision. Delivery trucks experienced frequent delays because of traffic congestion near the main factory.

- a. Identify three (3) economies of scale and three (3) diseconomies of scale that were factors that affected the running of AgroFresh Ghana Ltd
 - b. Using the case study information, explain the difference between economies of scale and diseconomies of scale.
 - c. Using the AgroFresh Ghana Ltd case study, and the economies and diseconomies of scale issues the company experienced, propose two strategies that would help the company maintain cost efficiency as it continues to grow. Give reasons for your proposals and fully justify your thinking
9. Kofi owns a small plantain chips business in Takoradi. To improve his operations, he records the output, total revenue and total cost at different levels of weekly production, as shown below

Output (Packets)	Total Revenue (GH¢)	Total Cost (GH¢)
100	200	150
200	400	280
300	570	390
400	700	520
500	750	670

Kofi plans to use this data to make better production decisions for his business.

- a. Using the data from the case study, calculate the Marginal Revenue (MR) and Marginal Cost (MC) for each level of output (from 100 to 500 packets). Show your working clearly.
 - b. From the case study, identify and explain the equilibrium output level and how it will help Kofi to make better production decisions.
 - c. Assume Kofi wants to expand his plantain chips business. Using the equilibrium point identified in the case study, evaluate the risks and benefits of producing above or below this output level. Propose a strategy that would help him increase profit without increasing costs too much.
10. Brimma Agro Ltd is a small-scale maize processing firm in Techiman, Ghana. The firm operates in a market where numerous firms sell identical maize flour at a market-determined price. Brimma Agro cannot influence the price of its product and must accept the prevailing market price of GH¢100 per bag. The management is reviewing cost and revenue data to determine the firm's equilibrium output level. The table below presents the firm's output, total cost and total revenue for various production levels.

Table: Brimma Agro Ltd.'s Output, Revenue and Cost

Output (Bags)	Total Revenue (GH¢)	Total Cost (GH¢)
0	0	300
10	1,000	800
20	2,000	1,300
30	3,000	2,100
40	4,000	2,800
50	5,000	3,900
60	6,000	5,300
70	7,000	6,800

- a. Using the table above, determine the output level at which Brimma Agro Ltd maximises profit. Justify your answer with calculations.
 - b. What type of market is Brimma Agro Ltd operating in, and explain why the firm cannot influence the market price despite being efficient?
 - c. If other firms enter the maize flour market due to high profits, what is likely to happen to Brimma Agro's equilibrium output and profitability in the long run? Use appropriate economic theory to explain.
 - d. Critically evaluate how knowledge of cost and revenue conditions helps firms like Brimma Agro make strategic production decisions, even when they are price takers.
- 11.** Koba Ice Ltd is a medium-sized company in Tamale, Ghana, that produces sachet water and ice blocks. It began in 2018 with the goal of maximising profit by cutting costs and improving efficiency. As competition in the sachet water industry increased in 2022, the company shifted its objective to gaining market share by lowering prices and expanding its distribution. In 2023, a fire damaged one of its production units, forcing the company to focus on survival. It worked to keep loyal customers, retain workers and secure funds to rebuild. By 2025, Koba Ice changed its focus again, this time to customer satisfaction and long-term growth. It introduced eco-friendly packaging and started preparing to launch frozen fruit juice products.
- a. Identify four (4) different objectives Koba Ice Ltd has pursued since its establishment.
 - b. Explain why Koba Ice Ltd shifted from profit maximisation to market share growth
 - c. What internal or external factors influenced the firm to focus on survival? Analyse them.

- d. How does the firm's current focus on customer satisfaction and growth help it remain competitive?
- e. Do you think a firm should always aim for profit maximisation? Justify your answer.

12. FlexiFare Transport Ltd is a private transport company operating long-distance bus services across major cities in Ghana. The company introduced a new pricing system to boost revenue and serve a wide range of customers. The fare from Accra to Kumasi is normally GH¢100, but passengers are now charged differently based on certain conditions. Passengers who book early online pay GH¢80, while those who buy tickets at the station on the day of travel pay GH¢100. Students and pensioners who show valid ID cards are given a special fare of GH¢60. On public holidays or weekends, the same ticket costs GH¢120 due to increased demand.

FlexiFare justifies this pricing model by explaining that it allows the company to attract more customers, cover operating costs and manage demand. However, some customers argue that it is unfair to charge different prices for the same journey. Others appreciate the flexibility, especially students and early bookers.

- a. Define price discrimination using the FlexiFare Transport Ltd scenario.
- b. Discuss two reasons why FlexiFare might prefer to use price discrimination instead of a single fixed fare.
- c. Evaluate two advantages and two disadvantages of this pricing method for both the company and customers.
- d. Imagine you are a government advisor. Would you recommend regulating price discrimination in the transport sector? Defend your position with economic reasoning.

SECTION

4

ELASTICITY OF
SUPPLY



Supply Of Goods and Services

INTRODUCTION

Think about what happens when there is an increase in prices. Do producers respond instantly or over time? In this section, you will explore the elasticity of supply, which shows how the quantity supplied responds to changes in the price of the commodity. You will learn how to measure it, what influences it and why it is such a useful tool for making smart economic decisions. You are stepping in with strong background knowledge! Earlier, you learnt what supply means, the different types and the law of supply, understanding how price influences quantity supplied. Later on, you explored what causes supply to shift and how to distinguish between a movement along the supply curve and a shift of the curve. You will learn how supply behaves when there is a change in market prices and why this matters for producers, planners and the economy as a whole.

KEY IDEAS

- Elasticity of supply measures how much and how quickly producers change the quantity supplied when market prices rise or fall.
- Supply elasticity depends on factors like time, production flexibility and resource availability, which determine how easily output can be adjusted.
- Supply elasticity is calculated by dividing the percentage change in quantity supplied by the percentage change in price.
- Understanding supply elasticity helps businesses make informed decisions about production, pricing and how to handle market changes.

ELASTICITY OF SUPPLY

Elasticity of supply refers to the responsiveness of the quantity supplied of a good or service to a change in its price, assuming all other factors remain constant (*ceteris paribus*).

Elasticity of supply shows how quickly and easily producers can change the amount of a good or service they offer for sale when the price changes.

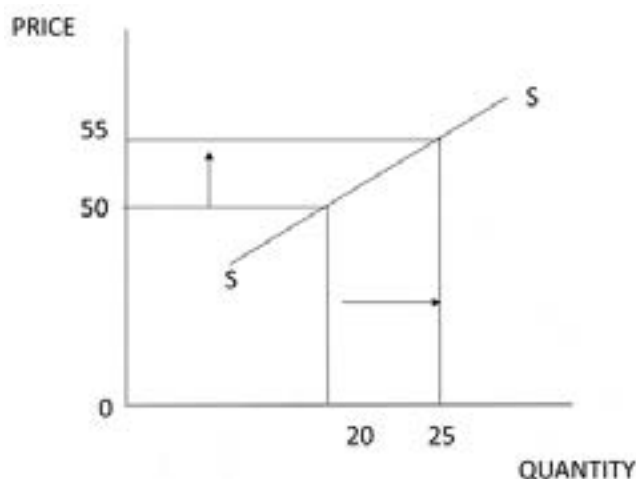
For example, some Ghanaian farmers can plant more crops quickly when prices rise like watermelon which grows fast and produces fruit in a few months, but others, like cocoa farmers, take years to increase supply because cocoa trees take years to mature and produce pods that can be harvested.

Types of Elasticity of Supply

There are five main types of price elasticity of supply

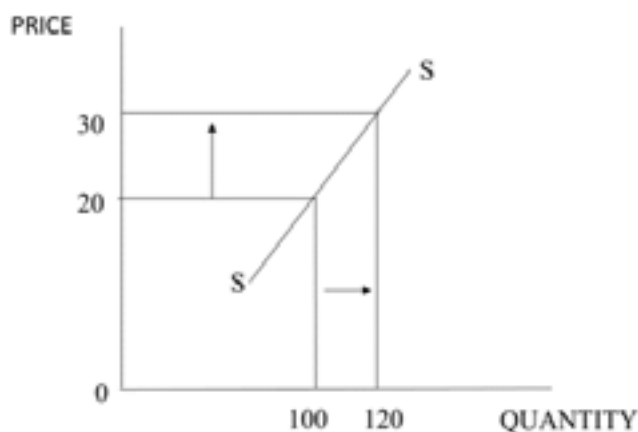
1. Elastic Supply ($PES > 1$)

Supply is elastic when a small change in price leads to a bigger change in quantity supplied. The coefficient of elasticity is greater than one but less than infinity. For example, if the price of maize increases by 10%, farmers in Ghana may increase their supply by more than 10% in the next season by planting more.



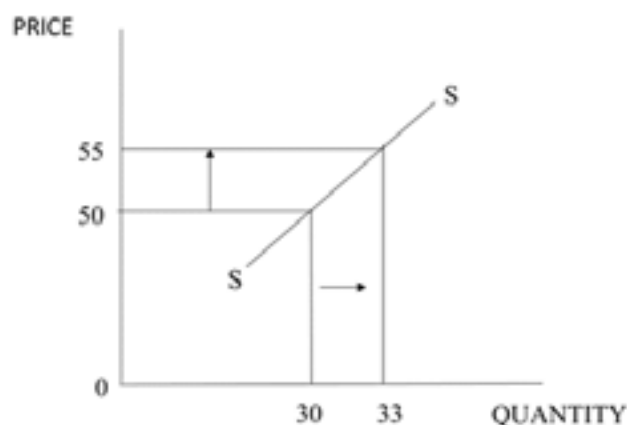
2. Inelastic Supply ($PES < 1$)

Supply is inelastic when the change in quantity supplied is smaller than the change in price. This means that a proportionate change in price leads to a less than proportionate change in quantity supplied. The coefficient of elasticity is greater than zero but less than one. For example, the supply of gold in Obuasi is inelastic in the short run. Even if the gold price increases, the supply of it may increase in a smaller proportion.



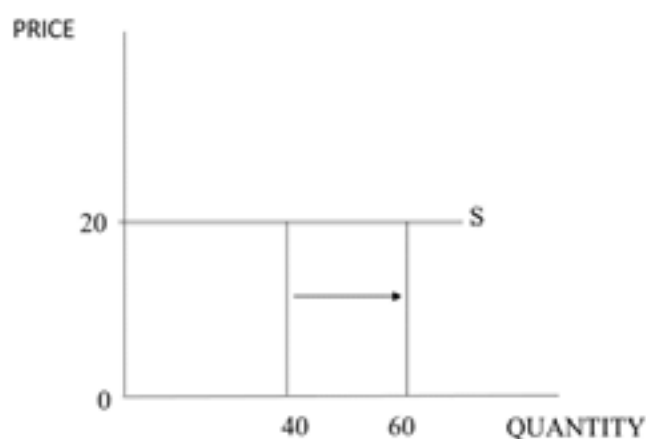
3. Unitary Elastic Supply ($PES = 1$)

Supply is unitary elastic when the percentage change in quantity supplied is the same as the percentage change in price. The coefficient of elasticity is equal to one. For example, the price of maize in Ghana increased by 5% and farmers increased the supply by 5%. The supply is therefore unitary elastic.



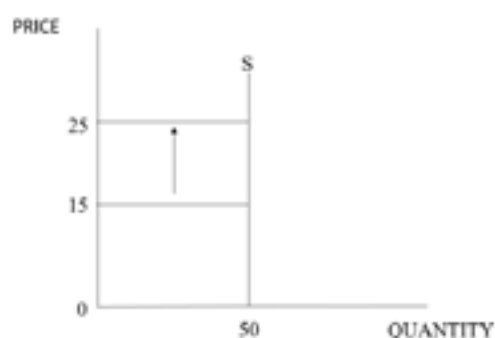
4. Perfectly Elastic Supply ($PES = \infty$)

Supply is perfectly elastic when suppliers are willing to supply any amount of goods at a specific price. The coefficient of elasticity is equal to infinity. For example, in areas like Kumasi, mobile money vendors may offer unlimited cash-out services at a fixed charge but will not provide the service at a lower charge due to competition and cost problems.

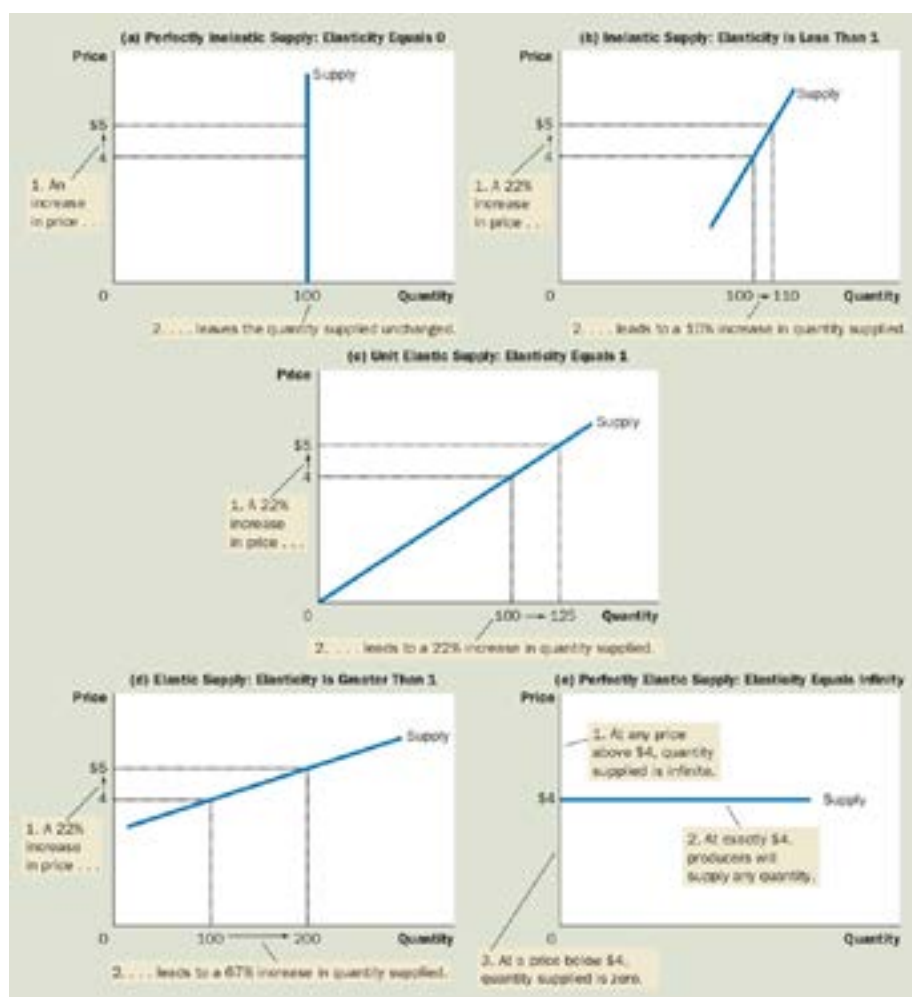


5. Perfectly Inelastic Supply ($PES = 0$)

Supply is perfectly inelastic when the quantity supplied does not change, no matter the price. For example, the supply of land is perfectly inelastic because even if price of land increase, the physical quantity of land cannot be increased.



Summary of Graphs to show price elasticity of supply



From article Microeconomics – Elasticity and Its Application

Activity 4.1 Revision on Supply - Freeman's Tomato Farm

Purpose: The purpose of this activity is to help you recall and apply key supply concepts through a simple farming scenario.

Duration: 40 minutes

Group Size: Individual work, Group research (4-5 members)

Materials needed: Notebook, Pen

Instructions

Step 1: (15 minutes)

Read the Scenario carefully and answer the questions individually. (10 minutes)

Scenario: Freeman's Tomato Farm

Freeman owns a small tomato farm in the Volta Region. When tomato prices were GH¢2 per kg, he supplied 100kg to the market weekly. When prices rose to GH¢4 per kg, he increased his supply to 200kg weekly.

Recently, the government provided free fertilisers to farmers and Freeman's production capacity increased. However, during the rainy season, some of his tomatoes got spoiled, reducing his ability to supply. Freeman noticed that the price of pepper (which he also grows) increases so he grows less tomatoes and more pepper.

Questions: Write a one-word or one-sentence answer to the questions below.

1. What does supply mean? _____ (One sentence)
2. What is Freeman's supply when the price is GH¢2? _____ kg
3. What is Freeman's supply when the price is GH¢4? _____ kg
4. Is this an increase or a decrease in quantity supplied? _____ (One word)
5. Free fertilisers cause an _____ in supply. (One word)
6. Spoiled tomatoes cause a _____ in supply. (One word)
7. Pepper is a _____ product for Freeman's tomato farm space. (One word)
8. The law of supply states, as price increases, quantity supplied _____. (One word)

Step 2: Compare your answers with a friend and make the appropriate corrections on your work in your notebook. (5 minutes)

Step 3: Elasticity of Supply Research (20 minutes)

In your groups, research and discuss the following (you can consult the internet or your Learner Material)

- a. Meaning of Elasticity of supply (3 minutes)
- b. How does elasticity of supply differ from elasticity of demand? (5 minutes)
- c. Identify and explain the types of elasticity of supply (10 minutes)
 - i. Perfectly elastic supply
 - ii. Perfectly inelastic supply
 - iii. Relatively elastic supply
 - iv. Relatively inelastic supply
 - v. Unitary elastic supply

Step 4: Share your findings with another group (5 minutes)

CALCULATION OF PRICE ELASTICITY OF SUPPLY

Price Elasticity of Supply (PES)

Price Elasticity of Supply (PES) measures how responsive the quantity supplied of a good or service is to a change in its price, assuming all other factors remain constant (ceteris paribus).

Formula for Price Elasticity of Supply (PES)

$$PES = \frac{\text{Percentage change in Quantity Supplied}}{\text{Percentage change in Price}}$$

This can also be written as:

$$PES = \frac{\left(\frac{\text{New Quantity Supplied} - \text{Old Quantity Supplied}}{\text{Old Quantity Supplied}} \right) \times 100}{\left(\frac{\text{New Price} - \text{Old Price}}{\text{Old Price}} \right) \times 100}$$

Simplified version: $PES = \frac{\Delta Q/Q}{\Delta P/P}$

Where:

ΔQ = Change in quantity supplied

Q = Original quantity supplied

ΔP = Change in price

P = Original price

Example

Consider the Scenario below:

A rice farmer in the Volta Region used to supply 400 bags of rice when the price was GH¢150 per bag. After the price increased to GH¢170, he increased the supply to 480 bags.

Solution

Step 1: Identify the figures

Old Quantity (Q_1) = 400

New Quantity (Q_2) = 480

Old Price (P_1) = GH¢150

New Price (P_2) = GH¢170

Step 2: Calculate the percentage change in quantity supplied

$$\left(\frac{480 - 400}{400} \right) \times 100 = 20\%$$

Step 3: Calculate the percentage change in price

$$\left(\frac{170 - 150}{150} \right) \times 100 = 13.33\%$$

Step 4: Apply the formula

$$PES = 20\% \div 13.33\% = 1.50$$

Interpretation of PES Value

PES > 1: Supply is elastic (producers respond quickly to price changes)

PES = 1: Supply is unitary elastic (balanced response)

PES < 1: Supply is inelastic (producers respond slowly)

PES = 0: Supply is perfectly inelastic (no response at all)

PES = ∞: Supply is perfectly elastic (unrealistic but used for theory)

In our example, PES = 1.50, which means supply is relatively elastic; the rice farmer was quite responsive to the price increase.

Example 2

The production of bags of cement by GHACEM increased by 40% from 500 bags when the price increased by 70% from GH¢100 per bag. Calculate:

- New quantity supplied
- New price of the commodity
- Price elasticity of supply

Solution

Old quantity(Q_1) = 500 bags

Old price(P_1) = GH¢100

$$a. \text{ New quantity}(Q_2) = \frac{40}{100} \times 500 = 200 \text{ bags}$$

Therefore, $Q_2 = 200 + 500 = 700$ bags

$$b. \text{ New Price}(P_2) = \frac{70}{100} \times 100 = \text{GH¢}70$$

$$P_2 = 70 + 100 = \text{GH¢}170$$

$$c. PES = 40\% \div 70\% = 0.57$$

Since PES is less than one, the supply is relatively inelastic.

Activity 4.2 Calculating Price Elasticity of Supply

Purpose: The purpose of this activity is to help you learn and practice calculating the price elasticity of supply through group problem-solving.

Group Size: 4-5 learners per group

Materials needed: Notebook, Pen, Calculator (if available)

Instructions

Step 1: Group Formation

Form groups of 4-5 learners

Step 2: Formula & Calculation

Work together to solve this problem:

Given Data:

- Price increases from GH¢10 to GH¢12
- Quantity supplied increases from 100 to 140 units

Tasks/Question:

- a. Write the PES formula
- b. Calculate the answer step by step
- c. Classify the elasticity type

Step 3: Group Sharing

Each group shares its answer and classification with another group

Step 4: Class Review

Confirm the correct answers and note them in your book.

Another way to calculate price elasticity of supply is using the mid-point formula (see section 1 where this formula is applied to price elasticity of demand) . Unlike the percentage change method above, the mid-point method accounts for variations in starting values and gives more accurate elasticity estimates, especially when changes are large. The mid-point formula is given as:

$$PES = \frac{[(Q_2 - Q_1) / (Q_1 + Q_2) / 2]}{[(p_2 - p_1) / (p_1 + p_2) / 2]}$$

Where Q1 and Q2 = original and new quantities supplied

P1 and P2 = original and new prices

FACTORS THAT AFFECT ELASTICITY OF SUPPLY

The factors that influence the elasticity of supply are:

1. Time Period

The more time producers have, the easier it is to increase supply. In the short run, supply is usually fixed and inelastic. In the long run, producers can adjust and expand output whenever there is a change in price, so supply becomes elastic. For example, in the long run, Ghana can build new power stations like the Bui Dam to produce more electricity but in the short run, the supply of power becomes inelastic.

2. Spare Capacity

If a firm has extra unused resources (spare capacity), it can easily increase production when prices increase. This makes supply elastic. For example, a bakery in Kumasi with extra unused ovens can bake more bread during festive seasons when the price of bread increases.

3. Availability of Stocks (Inventory)

If firms keep stock (extra goods), they can respond quickly to price changes. For example, cocoa farmers with warehouses full of stock of cocoa beans can sell more when prices increase. This shows that supply is elastic. Again, retailers in Makola Market can quickly increase supply if they have goods in stock whenever prices increase.

4. Ease of Factor Substitution

If it is easy to switch between workers and machines or raw materials in production, supply is more elastic. For example, a cassava processing plant in the Volta Region can switch from yam to cassava based on availability. This increases supply whenever there is increase in price. Supply, therefore, becomes elastic.

5. Mobility of Factors of Production

If workers, machines or resources can move easily from one use to another, supply is more elastic. For example, mobile money agents can quickly increase in number because they need little training or capital. Therefore, the supply of the services of mobile money agents is elastic.

6. Time Needed for Production

The longer it takes to produce a good, the harder it is to quickly increase supply. This means that the supply of such goods is inelastic in the short run. For example, timber supply is inelastic because trees take years to grow. However, maize from farms in Ejura takes a few months to mature, so supply is relatively elastic.

Importance of Price Elasticity of Supply

1. Price Stability

When supply is elastic, prices do not change too much because producers can quickly increase supply when demand increases. This helps to keep prices stable. For example, imported goods like rice and tin tomatoes can be brought in quickly when demand rises, therefore prices stay stable. However, local fruits like mangoes and oranges have inelastic supply because they are seasonal. This causes prices to increase during off-seasons leading to price instability.

2. Producer Revenue

Elasticity helps producers know how price changes will affect their total revenue. If supply is inelastic, higher prices usually mean higher revenue. For example, cocoa farmers in Ghana earn more when world cocoa prices increase, even if supply does not increase. Sachet water producers may earn more revenue by increasing supply since supply is elastic.

3. Government Policy

The government uses the concept of elasticity to make better decisions about farming, trade and other sectors. For example, fertiliser subsidy programmes offered by the government will increase food crop production quickly when prices go up. This will increase supply and stabilise prices.

4. Business Planning

Firms use the understanding of elasticity to prepare for demand changes and decide how much to produce. For example, Coca-Cola company limited may prepare for high demand during events or hot seasons by increasing output.

Activity 4.3 Factors of Elasticity of Supply' and 'Importance of PES

Purpose: The purpose of this activity is to help you identify factors that affect the elasticity of supply and apply them to real-world examples.

Group Size: 4-5 learners per group

Materials needed: Notebook, Pen, Paper, Manila card/large paper

Instructions: This activity is in 2 parts (Part A and Part B)

Part A:

Step 1: Group Formation

Form groups of 4-5 learners

Step 2: Read the scenario carefully and identify the factors that influence supply

Benjamin's Bread Business

Benjamin owns a small bakery in Mangoase. When bread prices increased, he wanted to bake more but he faced some challenges. His old oven was too small and he couldn't afford a bigger one immediately. Fresh bread goes bad quickly, so he can't store much. The government reduced taxes on flour, making production cheaper. More bakeries opened nearby, increasing competition. He bought a new mixing machine that speeds up production. During the rainy season, flour deliveries were delayed, affecting his supply.

Using your notebook, work together as a group to

- List the main factors that affect the elasticity of supply.
- Explain each factor briefly.

Step 3: Real-Life Examples

Give 1 example of goods/services for each factor you have identified.

E.g., Technology - handmade crafts vs factory goods

Part 2:

Instructions

Step 1: Maintain your groups

Step 2: Poster Design

Create a poster titled “**Why Elasticity of Supply Matters.**”

Include:

- Definition of elasticity of supply
- Three main reasons why the elasticity of supply is important
- One short example for each reason in (b) above

Step 3: Poster Presentation

Display posters around the classroom wall for viewing by all groups.

EXTENDED READING

- <https://www.youtube.com/watch?v=sSeByVLztJg>



- <https://www.youtube.com/watch?v=3kr5eg-AiP0>



REVIEW QUESTIONS

1. What does the elasticity of supply measure
2. Why is it important for producers to understand the elasticity of supply?
3. Why might a farmer be unable to increase supply quickly after a price rise?
4. Adom Tomato Farm in the Central Region of Ghana produces tomatoes throughout the year. During the dry season, the farm uses irrigation to grow crops, but it cannot always increase supply quickly when prices rise. This is because tomato production takes time and depends on resources like seeds, water and labour. Even if prices go up, the farm may not respond immediately due to these limitations. In the rainy season, however, the farm can produce more easily since water is available, and labour is cheaper. This allows the farm to respond faster to price changes.
 - a. Explain why the supply of tomatoes from Adom Tomato Farm is more elastic during the rainy season than in the dry season. Use examples from the case to support your answer.
 - b. Assume the government plans to increase the market price of tomatoes to encourage local production. Evaluate how effective this policy might be in both the dry and rainy seasons. Propose one strategy the farm could adopt to make its supply more elastic throughout the year. Fully reason and justify your strategy proposal.
5. Nana Yaa owns a small pineapple farm in the Eastern Region of Ghana. In January, she sold pineapples at GH¢5 per fruit and supplied 200 fruits to the market. By March, the price had increased by 20%. To take advantage of the higher price, she increased her supply by 60 pineapples. Nana Yaa wants to calculate the price elasticity of supply to understand how responsive her supply was to the change in price. She also noticed that her profit margin improved because she sold more pineapples at a higher price. This information will help her plan better during the next planting season.
 - a. Using the midpoint formula, calculate the price elasticity of supply for Nana Yaa's pineapples. Explain what the result tells you about how responsive her supply was to the price change.
 - b. Using the information in the case, analyse how Nana Yaa's decision to increase supply in response to the price change reflects the concept of price elasticity of supply. How might this understanding help her make better production and pricing decisions in future planting seasons?
 - c. Evaluate how understanding how supply responds to price changes can help Nana Yaa handle changes in pineapple prices and suggest two low-cost ways she can respond better to future price increases.

- 6.** Afia owns a vegetable farm near Kumasi. She grows tomatoes and green peppers for the local market. One season, the price of tomatoes rose sharply. Afia wanted to supply more but could not respond quickly because her land was small and she had few workers. It also took time for new crops to grow. Later, Afia expanded her farm, hired more workers and installed an irrigation system. These changes helped her produce more vegetables quickly when prices increased. She realised that factors such as land size, time and available labour affect how easy it is to increase supply. Understanding the elasticity of supply helped Afia plan better. She now knows when to increase production to capitalise on higher prices and minimise losses when prices fall. This knowledge helps her stay competitive and earn steady profits.
- a.** From the case study, identify two factors that made it difficult for Afia to increase her vegetable supply when prices first went up.
 - b.** Using Afia's experience, explain two factors that affect how easily a farmer can increase supply when prices go up.
 - c.** Explain how Afia's investment in more land and better equipment helped her increase supply more easily when prices went up.
 - d.** Analyse how Afia's changes to her farm improved her ability to respond to price increases. How can this help her make better production decisions in the future?
 - e.** Using Afia's case, analyse why understanding the price elasticity of supply is important for farmers when planning how much to produce and when to sell.

SECTION

5

CHANNELS OF DISTRIBUTION



Market Analysis

INTRODUCTION

Have you ever wondered how a product gets from the factory to your hands? In this section, you will dive into how goods move from producers to final consumers through different distribution channels. You will explore the methods businesses use, the agencies involved and some of the real-world challenges that affect how goods reach the market. You will also think critically about practical solutions that firms and governments can use to improve the process. To make sense of it all, you will draw on what you have already learned, like how different types of markets operate and where buying and selling take place. You have also looked at how market structures work and how firms earn profits in competitive or monopolistic environments. These earlier ideas help you understand why businesses choose certain distribution methods, what problems they face and how these systems can be made more efficient.

KEY IDEAS

- Channels of distribution are the paths and methods through which goods move from producers to final consumers, often passing through wholesalers and retailers.
- Distribution faces challenges like high transport costs, poor roads and limited storage, which make it difficult and expensive to deliver goods.
- Improving storage facilities, road networks and coordination systems can reduce delays and costs in the distribution process.
- Wholesalers, retailers and agents act as distribution agencies that help move goods efficiently from producers to consumers.

CHANNELS OF DISTRIBUTION, METHODS AND AGENCIES

Channels of distribution are the ways or routes through which goods move from the producer to the final consumer.

In Ghana, when goods like rice from Aveyime, yams from Techiman and cocoa or phones from Tema Port are produced or imported, they do not go straight to the consumer. They pass through different people or groups called agents or intermediaries, who help move the goods until they reach the final consumer. For example, when Kasapreko produces bottles of Awake Mineral Water, they are transported from the

bottling plant to regional distributors, passed on to wholesalers in places like Sunyani and Cape Coast, and finally delivered to retailers — so you can grab a chilled bottle from any kiosk or convenience store in Tamale or Ho.

Channels of Distribution

1. Direct Channel

Goods are transferred straight from the producer to the consumer without middlemen. For example, a kente weaver in Bonwire sells woven Kente directly through social media platforms Facebook or their own WhatsApp business account. Again, Fishermen at Elmina or James Town landing sell freshly caught fish directly to households or individuals who come to buy at the shore.

2. Indirect Channel

Goods go through intermediaries or agents such as wholesalers and retailers before reaching the consumer. For example, Coca-Cola bottles soft drinks in Accra and distributes them through regional distributors and sub-distributors. Retailers such as kiosks, restaurants, etc., buy from these middlemen and sell to consumers.

Indirect channels of distribution can be put into various forms. These are

- i. Three-Level Channel: Producer → Agent → Wholesaler → Retailer → Consumer
- ii. Two-Level Channel (Vertical Marketing System – VMS): Producer → Wholesaler → Retailer → Consumer.

Methods of Distribution

1. Wholesale Distribution: Wholesalers buy large amounts from producers and sell in smaller amounts to retailers. For example, wholesalers in Makola are selling bags of rice to shops.
2. Retail Distribution: Retailers sell directly to final consumers. For example, Tabletop sellers, Melcom shops.
3. E-commerce & Digital Sales: Goods are sold online through platforms like Jumia, Instagram or WhatsApp. For example, ordering a pair of shoes online and receiving them from a delivery rider.
4. Mobile Distribution: Goods are sold on the move in vans, on tricycles or by foot. For example, Yoghurt sellers, P.K sellers in Accra traffic.

Main Agents in Distribution and Their Functions

1. Producers

They create goods by combining the factors of production or resources. For example, Nestlé Ghana (Milo), Kasapreko Company Limited (drinks), Akosombo Textiles Limited

Functions of Producers

- a. They make or create the goods and services.

- b. They engage in packaging and branding of goods and services to attract buyers.
- c. The set prices for the good or service.
- d. They engage in intensive advertising on the all-media platform to inform and educate buyers of their product.

2. **Wholesalers**

They buy in bulk and sell in smaller quantities to retailers. For example, a wholesale provision shop in Kejetia sells to provision shops and kiosks.

Functions:

- a. They break the bulk. They buy in large quantities and sell in smaller quantities to retailers.
- b. They store goods in warehouses and release them to buyers when they need them.
- c. They sell to retailers on credit. They can buy on credit and pay later. This serves as a source of finance for the retailers.
- d. They help in the distribution of goods on behalf of the producers. This reduces the distribution burden of producers.
- e. Give feedback from retailers and consumers to producers. This will help to improve the quality of the product.

3. **Retailers**

They sell goods and services directly to consumers in small units. For example, Kiosk owners, tabletop sellers and Supermarkets like Melcom.

Functions:

- a. They sell goods in small quantities (e.g., provisions, bottles or sachets of water).
- b. They bring goods and services closer to people. This makes buying convenient.
- c. They provide market information to wholesalers concerning consumers' taste and preference.
- d. Retailers assist in increasing the visibility of new products by engaging in personal selling. This helps to promote the product.

4. **Distributors**

They officially supply goods from producers to sellers. For example, Kasapreko uses distributors to transport and supply its alcoholic and non-alcoholic beverages to wholesalers and retailers nationwide. MTN uses distributors to supply airtime and SIM cards.

Functions:

- a. They make sure products are all available.
- b. They manage and monitor sales areas on behalf of the producer.

- c. They help to promote brands locally through banners and billboards.
- d. They help in handling customer complaints and also help in product improvement.

5. Agents and Brokers

They connect buyers and sellers and earn a commission for any completed transaction. For example, Real estate agents in cities like Accra or Kumasi link property owners with potential buyers or tenants. They earn a commission, usually a percentage of the sale or rental amount, once the transaction is finalised.

Functions:

- a. They help in negotiating deals between producers and buyers.
- b. They provide market information concerning market prices and demand patterns.
- c. They earn commission on any sales made
- d. They save producers from hiring many salespeople, which helps to reduce marketing costs.

6. Transport and Logistics Companies

These are companies that facilitate the transportation and delivery of goods from one location to another. For example, FedEx Ghana, DHL and Melcom delivery service.

Functions:

- a. They transport goods from one location to the other.
- b. They ensure goods and services reach consumers on time.
- c. They offer storage and warehousing services.
- d. They help to ensure that goods and services are transported between rural and urban areas.

Types of Distribution Strategies

1. **Intensive Distribution:** This is where goods are sold everywhere possible. For example, Voltic bottled water is sold in shops, kiosks and by street sellers.
2. **Selective Distribution:** This is where goods are sold in selected outlets only. For example, Nestlé products are sold only in selected supermarkets and pharmacies.
3. **Exclusive Distribution:** This is where products are distributed through a single outlet or a very limited number of outlets within a particular area. For example, Toyota cars are sold only at Silver Stars in Accra. Samsung phones are sold only in certified shops in Accra.
4. **Direct Distribution:** This is where the producer sells goods directly to the final consumer without using intermediaries. For example, a kente weaver in Bonwire sells directly to tourists or on social media.

Activity 5.1 Recap on Market Distribution Chain

Purpose: The purpose of this activity is to help you understand market concepts and experience the distribution process through hands-on role play and product movement simulation.

Group Size: 6 learners per group

Materials needed: Small objects (stones, erasers or paper balls), Name tags, Notebook, Pen

Instructions

Step 1: Group Formation & Market Recap

- Form groups of 6 learners
- Quickly discuss and complete the table below

Market Structures and Profits:

Market Structure	Type of Profit
Perfect Competition	_____
Monopoly	_____
Monopolistic Competition	_____

Step 2: Role Assignment

Each group member takes one role:

- Producer/Manufacturer** - Makes the product
- Agent/Broker** - Connects manufacturer to wholesaler
- Wholesaler** - Buys in bulk from manufacturer
- Retailer** - Sells to final consumers
- Transporter** - Moves goods between stages
- Consumer** - Final buyer of the product

Step 3: Product Selection & Setup

- Choose a Ghanaian product (e.g., gari, soap, cloth)
- Create name tags for your roles
- Arrange yourselves in a distribution chain order

Step 4: Role Play Distribution Process

- Act out your roles as the product moves through the chain
- Pass objects representing your product from the manufacturer to the consumer
- Each person explains their role when receiving/passing the product

Step 5: Concept map creation

After the role play, create a concept map that includes:

- a. Types of distribution methods used
- b. Key agencies involved
- c. Different channels (e.g., direct to consumer, through wholesaler, via agent)
- d. Display your concept map on the classroom wall for other groups to see.

PROBLEMS AND SOLUTIONS OF DISTRIBUTION

Distribution is the process of making goods and services available to consumers at the right place, in the right quantity and at the right time.

In Ghana, producers face some challenges when trying to move goods from farms or factories to the market. But there are also solutions to improve distribution.

Problems of Distribution

1. Poor Road Network

Many roads in rural areas are bad or unpaved, making the transportation of goods from the rural areas to the urban centres difficult. For example, farmers in places like Walewale or Tumu find it hard to send yams or maize to Accra because of bad roads.

2. Inadequate Storage Facilities

There are not enough warehouses or storage facilities to store goods, leaving the perishable goods to rot before reaching the consumer. For example, tomatoes from Techiman may rot before reaching the market due to a lack of cold storage.

3. High Transportation Costs

Fuel prices are high, and roads are poor, making transport expensive. This leads to higher prices for consumers and lower profits for producers.

4. The existence of many middlemen

There are too many middlemen in the distribution chain. They cause an increase in prices and reduce earnings for producers. For example, a cocoa farmer in Tafo may get less income because several agents take a share of the price.

5. There is an inconsistent Power Supply

Frequent power cuts affect the storage of goods, especially perishable items. For example, Fish sellers in Jamestown may lose goods due to power outages affecting cold stores.

6. Lack of Modern Technology

Many sellers do not use digital tools like online platforms to track inventory or sell online, which slows the distribution process.

7. Insecurity and Theft

Goods can be stolen when attacked by armed robbers or damaged during transportation to urban centres. For example, trucks carrying food from the north may be attacked on highways by armed robbers.

Solutions to the Problems of Distribution

1. There must be an improvement in transportation networks

The Government should build and repair feeder roads, especially in farming areas, to make the transportation of goods from rural areas to urban centres easier and faster.

2. Provision of adequate storage facilities

The government must support producers by building modern warehouses and cold rooms in key farming towns. This helps preserve perishable goods such as fruits, vegetables and fish.

3. The government should reduce transport costs and reduce taxes on fuel

The government can subsidise fuel or reduce taxes on fuel and support transport unions to lower the transportation cost of moving goods.

4. Direct sales must be encouraged by producers

Farmers and producers must sell directly to consumers or retailers. This will remove some middlemen in the distribution chain and increase profits. For example, a rice farmer in Hohoe can sell directly to shops in Accra.

5. Improvement in power supply

There must be an adequate supply of stable electricity for cold stores and storage facilities, especially in rural markets. This will reduce the spoilage of perishable goods.

6. The use of modern technology

Producers in the rural and urban areas should be encouraged to use mobile apps, GPS, online shops and inventory systems. This will make distribution easier and efficient. For example, a fashion designer in Kumasi uses Instagram and WhatsApp to sell clothes and arrange delivery.

7. There must be an increase in security measures to protect goods

More police must be deployed on highways to protect transported goods against attack by armed robbers. There must be proper and secure packing to prevent easy spoilage of goods.

Activity 5.2 Distribution Field Investigation

Purpose: The purpose of this activity is to help you investigate real distribution processes, identify challenges and propose solutions through collaborative field work and presentation.

Duration: 2 weeks (Week 1: Field work, Week 2: Analysis & Presentation) Group Size: 4-5 learners per group

Materials needed: Notebook, Pen, Camera/Phone (if available), Flipchart paper, Markers

Instructions

Week 1: Field Investigation

Step 1: Group Formation & Site Selection (Day 1)

- a. Form groups of 4-5 learners
- b. Choose investigation site: local market, school canteen, shop, warehouse or small business center
- c. Design your investigation questions. E.g., How do goods and services move from the producer to the consumer? What challenges are faced in the distribution process?

Step 2: Field Visit & Data Collection (Day 2-3)

Visit your chosen site and investigate:

- a. The distribution process used
- b. Challenges encountered in distribution
- c. Current solutions being used in the workplace

Week 2: Analysis & Presentation

Step 3: Data Analysis

Work together to:

- a. Summarise field findings in 200 words
- b. Identify at least three key distribution problems
- c. Describe causes and impacts of those problems

Step 4: Solution Development

Suggest two or more realistic solutions for the identified problems

Step 5: Create Presentation

Design a poster or digital slideshow to include

- a. Summary of findings
- b. Key problems identified
- c. Proposed solutions

Step 6: Display your work

Use a projector to display your poster or paste it on the classroom wall for appreciation from other groups.

As an alternative to collecting information in the field this activity might be done as online research using real case studies.

- Use Ghanaian business websites, social media pages, and local news reports to study supply chain practices.
- Focus on products like mineral water, sachet water, dried fish, vegetables, or locally produced soap.
- Choose a company like Voltic, Kingdom Books, or Blue Skies for a mini-case study.
- Virtual interviews can be organised with local retailers.
- Schedule phone or video calls with local shop owners, wholesalers, or distributors.
- Prepare a short interview guide based on your investigation questions.
- Ask about delivery schedules, supplier relationships, and distribution challenges.

EXTENDED READING

- <https://www.youtube.com/watch?v=F0It4Ov3VTU>



- <https://www.youtube.com/watch?v=GtfhjBSevo8>



- <https://www.youtube.com/watch?v=AgH3pUSTEig>



- https://www.youtube.com/watch?v=FnZOxS0B_hU



- <https://www.youtube.com/watch?v=IRJey56tB14>



REVIEW QUESTIONS

1. What is the main purpose of a distribution channel in business?
2. Why might a business choose to use a shorter distribution channel?
3. What is the role of an agent in a distribution system?
4. What does a selective distribution strategy involve?
5. What is a common distribution problem faced in rural areas?
6. If a firm is experiencing high fuel costs and late deliveries, what would be an effective solution?
7. Amina runs a small business in Tamale that produces handmade natural soap using shea butter and essential oils. At first, she sold her products directly to customers at local markets. As demand grew, she began using different channels to reach more people. She started selling her soap to retail shops in Tamale and Kumasi. She also partnered with a local distributor who delivers large orders to supermarkets. In addition, she created a social media page and began taking online orders for home delivery. Amina now uses multiple methods to distribute her products. These include direct selling, retail shops, wholesale distribution and online sales. This helps her reach more customers, increase sales and grow her business across the region.
 - a. Explain two ways Amina changed how she sells and delivers her products as her business grew. How did these changes help her reach more customers?
 - b. Analyse how using different ways to sell and deliver her soap has helped Amina to grow her business. How might her choice of these methods affect her success in new markets?
8. Kwesi produces natural honey in the Ahafo Region of Ghana. At first, he sold the honey himself at nearby markets. As demand increased, he decided to work with different agencies of distribution to help him sell more across the country. He now uses wholesalers who buy in bulk and supply shops in major towns. He also works with retailers who sell directly to customers in supermarkets. In addition, he uses an agent in Accra who finds new customers and handles large orders on his behalf. Kwesi applies a selective distribution strategy. He chooses specific shops and partners that match his brand and target customers. This approach helps him control product quality, build strong relationships and reach the right market without spreading his business too far.
 - a. Explain two agencies of distribution that Kwesi uses to sell his honey. How does each agency help him reach more customers?
 - b. Analyse why Kwesi chose a selective distribution strategy for his honey business. How can this strategy help him grow and protect his brand?
9. Badu owns a small rice packaging company in the Savanna Region of Ghana. He supplies packaged rice to retailers in Tamale, Bolgatanga and Wa. At first,

his business grew quickly, but he later faced several distribution problems. His delivery trucks often broke down due to poor roads in rural areas. Sometimes retailers complained about delays or damaged packages. Rising fuel prices also made transportation expensive and reduced his profit. These issues made it hard for Badu to meet customer demand on time. To solve these problems, Badu started using stronger packaging materials to prevent damage. He also hired local drivers who knew the roads better and began scheduling deliveries during cooler times of the day to avoid overheating and delays. He is now working with a transport company that offers more reliable vehicles at better rates.

- a.** Explain two problems Badu faced in distributing his rice. How did he try to solve each problem?
- b.** Analyse how Badu's solutions helped improve his rice distribution. How might these changes affect his relationship with retailers?
- c.** Assume fuel prices rise again, and road conditions get worse. Evaluate the long-term impact this could have on Badu's business. Suggest two strategies he could use to keep distribution reliable and costs low. Fully reason and justify your strategy.



SECTION

6

PRICE CONTROL

PRICE AND EQUILIBRIUM ANALYSIS

INTRODUCTION

Imagine walking into a shop and seeing the price of bread fixed by the government. What might happen next? Would everyone get enough? Would producers be willing to keep supplying it? In this section, you will explore how governments intervene in markets using price floors and price ceilings. You will also investigate how these controls affect prices and quantities and how they can lead to shortages, surpluses, or improved access to basic goods. You are stepping in with valuable economic understanding! Earlier, you examined how prices are determined through the interaction of supply and demand and how equilibrium is reached. You also explored factors that influence pricing decisions in a free market. These provide the foundation for understanding how price control policies change normal market outcomes and why such measures are sometimes used to protect consumers or producers.

KEY IDEAS

- A price floor is when the government sets a minimum price, such as a minimum wage, to ensure producers or workers receive fair income.
- A price ceiling is when the government sets a maximum price for a good or service, like rent limits, to stop prices from rising too high for consumers.
- Price controls are policies used to protect consumers from high prices or to support producers with guaranteed minimum earnings.
- These controls can disrupt market balance by causing shortages when prices are too low (ceilings) or surpluses when prices are too high (floors).

PRICE CONTROL

Price control is a government policy that regulates the prices of goods and services in the market.

In this case, the government sets limits on how high or low prices of goods and services can go. Governments use price control to protect consumers from high prices, ensure basic goods remain affordable, support producers to earn stable income, reduce exploitation in the market, and also control inflation in the economy.

Types of Price Control

There are two main types of price control; Price Floor and Price Ceiling.

Price Floor

A price floor is the lowest legal price the government allows sellers to charge for a product or service. It is usually set above the equilibrium (market) price to help producers, such as farmers, dressmakers, carpenters and manufacturing companies, earn enough income. While it can help producers, it can also lead to excess supply (surplus) if the price is set too high.

Key Features of a Price Floor

1. It is set by the government to ensure that producers receive fair payment for their goods or services.
2. Sellers cannot charge a price below the price floor.
3. It is meant to protect producers like farmers or manufacturers.
4. It can lead to surplus (excess supply) if it is too high.
5. It guarantees producers a minimum income even when market prices fall too low.

Examples of Price Floors

- a. Minimum wage: The lowest amount an employer is legally allowed to pay a worker (e.g., the national daily minimum wage in Ghana for 2025 is GH¢19.97).
- b. Cocoa price in Ghana: The government sets a minimum price for cocoa to help cocoa farmers earn a good income, even when world prices are low.

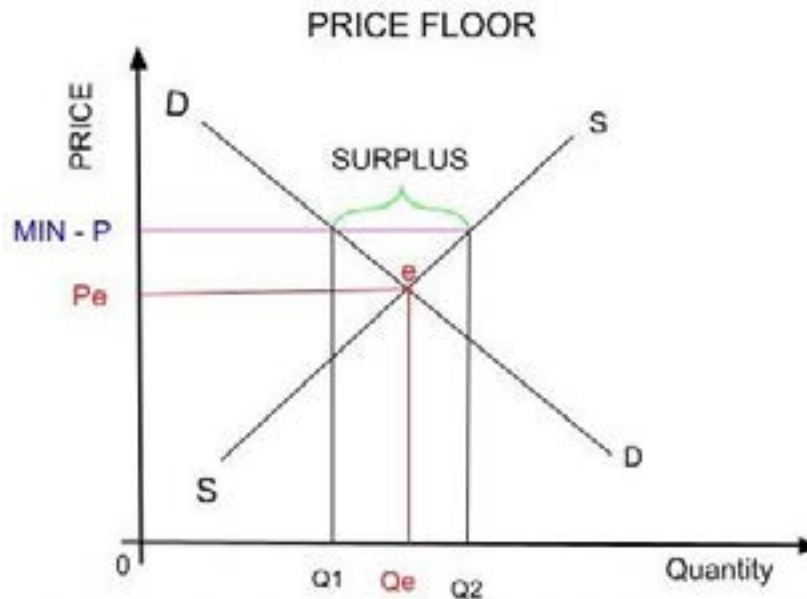
What other examples in Ghana will you talk about?

Illustration

Let us say the market price (equilibrium price) for a bag of gari is GH¢ 200. The government wants to help gari producers, so it set a minimum price of GH¢ 250 per bag.

What happens?

- a. Gari producers are happy and produce more gari (because they earn more per bag).
- b. Buyers do not want to buy as much (because GHS 250 is expensive).
- c. This causes a surplus – more gari on the market, but fewer people buying it.



The diagram above shows a price floor, where the government sets a minimum price (MIN-P) above the equilibrium price (P_e). At this higher price, the quantity supplied (Q_2) exceeds the quantity demanded (Q_1), resulting in a surplus in the market.

Activity 6.1 Revision – Market Equilibrium to Price Floor

Purpose: The purpose of this activity is to help you understand price and equilibrium analysis and explore government price controls through discussion and research.

Duration: 40 minutes

Group Size: Pairs, then whole class

Materials needed: Notebook, Pen, Textbook/Phone for research

Instructions

Step 1: Price & Equilibrium Recap (10 minutes)

Work individually to write brief notes on the following themes:

- What does price represent in an economy? (3 minutes)
- List any 3 factors that affect pricing (3 minutes)
- Explain the relationship between equilibrium price and quantity (4 minutes)

Step 2: Pair work (15 minutes)

Think silently about this question: “Have you or someone you know ever complained about prices being too high in Ghana?” (5 minutes)

- Write down your personal experience or a story you have heard about high prices

Pair and share your thoughts with a partner:

- a. Take turns sharing your experiences (4 minutes each)
- b. Why do people complain about high prices? (2 minutes)

Step 3: Price Floor Research (12 minutes)

Work in pairs to research and explain:

- a. Price Floor (4 Minutes)
- b. One Example Of A Price Floor In Ghana (4 Minutes)
- c. How Price floor affects consumers and producers (4 minutes)

Step 4: Class Discussion (3 minutes)

Quickly share your findings on the price floor with another pair

PRICE CEILING

A price ceiling is the highest price a seller is legally allowed to charge for a product or service. The government sets this price below the market (equilibrium) price to make important goods more affordable for everyone and is especially for people with lower incomes.

Key Features of a Price Ceiling

1. It is set by the government to stop prices from rising too high.
2. Sellers cannot charge above the set price.
3. It helps to protect consumers, especially during tough times like economic hardship or inflation.
4. If the ceiling is set too low, it can lead to shortages (excess demand) because demand becomes higher than supply.

Examples in Ghana

- a. Electricity tariffs for lifeline consumers (those who use less power) are kept low to support poor households.
- b. Maize and rice price controls during food shortages to make staple foods affordable.
- c. Transport fares may be regulated during times of fuel price hikes to protect passengers.

Illustration

Imagine the equilibrium price of a bag of cement is GHS 80, but due to high building costs, the government places a price ceiling at GHS 60 to help people build houses.

What happens?

- Consumers would want to buy more cement because it is cheaper.
- Producers would not be willing to sell more because they would make less profit.
- It will cause a shortage, that is, many people want to buy, but there will not be enough cement available.



The diagram above shows a price ceiling, where the government sets a maximum price (MAX-P) below the equilibrium price (P_e) to make goods more affordable. At this lower price, quantity demanded (Q_2) is greater than the quantity supplied (Q_1), causing a shortage in the market.

Activity 6.2 Understanding Price Ceiling

Purpose: The purpose of this activity is to help you explore price ceilings and understand when low prices can be problematic, through discussion and research.

Duration: 25 minutes

Group Size: Pairs, then whole class

Materials needed: Notebook, Pen, Textbook/Phone for research

Instructions

Step 1: Individual reflection (15 minutes)

Think silently about this question: “Have you or someone you know ever complained about prices being too low in Ghana?”

- Write down some examples you know [e.g., suspicion of counterfeit goods (fake electronics), street food much cheaper than it usually is (hygiene standards), unethically sourced goods (child labour)]

Pair and share your thoughts with a partner:

Take turns sharing your experiences (3 minutes each)

Discuss: When can a price ceiling cause problems due to low prices? (1 minute)

Share (3 minutes) Volunteers share ideas on a and b with the class

Step 2: Price Ceiling Research (8 minutes)

Work in pairs to research and find answers to the following questions:

- What is a price ceiling? (3 minutes)
- Identify at least two examples of price ceilings in Ghana (3 minutes)
- How does the price ceiling affect consumers and producers? (2 minutes)

Step 3: Share your findings with another pair in the class. (2 minutes)

Summary of the Impact of Price Floor and Price Ceiling on the Economy

Problems of Price Controls

1. It leads to shortages (Under Price Ceilings): When the government sets prices below the equilibrium price, demand exceeds supply. This creates a shortage in the market. For example, in 2022, fuel shortages happened in some parts of Ghana when fuel prices were controlled and not allowed to reflect global price increases.
2. It leads to surpluses (Under Price Floors): When the government sets prices above the equilibrium price, producers supply more, but buyers want less. This leads to an excess supply, causing a surplus in the market. For example, if the government of Ghana sets a high price for maize to support farmers, they may produce too much maize, but not all of it will be bought. What will happen to the surplus? Think about it.
3. There will be Black Marketing: When goods are scarce due to price controls, illegal markets may form, where products are sold at high prices secretly. This defeats the government's efforts and may lead to inequality. For example, during LPG gas shortages in Ghana, some people sell it secretly at higher prices.
4. It can lead to poor product quality: If sellers cannot increase prices during price ceilings, they may lower the quality of the product to cut costs. For example, if

rent is controlled in Accra, landlords may not fix broken facilities because they will not make enough money from rent.

5. It may lead to the misuse of resources (Distorted Resource Allocation): When prices do not reflect real demand, producers may keep making goods that are not needed much. For example, if cocoa prices are fixed too high, farmers may overproduce cocoa, even if global demand for cocoa is falling.
6. There will be unemployment: If minimum wages are set too high, some businesses may not be able to employ workers, especially those with little experience. For example, a small shop in Tamale may not hire more workers if they must pay each shop attendant a high wage.
7. It brings corruption and favouritism: When goods are in short supply, some people may give bribes or use 'connections' to get them, instead of following fair procedures. For example, during fertiliser shortages, some farmers may get supplies early because they know someone in the Ministry of Agriculture.

Positive Effects of Price Floors

1. It protects producers: It helps farmers and manufacturers to earn a minimum amount, which prevents them from a loss of profit when prices are very low.
2. It encourages production: It helps boost supply in important sectors such as agriculture. For example, setting a high price for yams can encourage more farmers to grow them.
3. It improves the living standards of workers: With better earnings, workers or farmers can take care of their families and meet basic needs.

Negative Effects of Price Floors

1. There will be surpluses where more goods are produced than people can buy.
2. It will cause unemployment if wages are too high for employers to pay or hire.
3. It can burden the government when it has to buy unsold or surplus goods from the market to maintain the price.
4. There will be inefficient use of resources if producers keep making products that do not sell well. This will cause wastage.

Positive Effects of Price Ceilings

1. It protects consumers by making essential goods available at lower prices.
2. It increases access to important goods like medicine, housing, and fuel.
3. It helps to control inflation in times of increased aggregate demand.
4. It prevents sellers from taking advantage of consumers during shortages or emergencies.
5. It helps low-income households to afford necessities they might otherwise be unable to buy if prices were high.

Negative Effects of Price Ceilings

1. It creates shortages as demand exceeds supply.
2. It can lead to black markets where goods may be sold secretly at higher prices.
3. Producers or sellers may produce low-quality goods to save costs. For example, tenants may get poor services in rented rooms because landlords earn less.
4. This might cause a decrease in production if profits are too low for producers and service providers.

Activity 6.3 Price Control Effects Discussion

Purpose: The purpose of this activity is to help you understand the effects of price controls through quote analysis and sharing in your partner's ideas.

Duration: 30 minutes

Group Size: Pairs

Instructions

Step 1: Individual Analysis (8 minutes)

Individually read these quotes and brainstorm

Quotes:

- Farmer:** "The government price for maize is high, but now I can't sell much."
- Consumer:** "I cannot find cooking oil anymore. The price is low, but it is always out of stock."
- Fuel seller:** "Since the price is fixed, I sell secretly at a higher price to make more profit."

Write down in your notebook:

- What price control problem is shown in each quote above? (4 minutes)
- What can the government do in each case? (4 minutes)

Step 2: Pair Discussion (18 minutes)

- Share your analysis with your partner (6 minutes)
- Add your opinion and experiences with any of the quotes above (6 minutes)
- Build on your partner's ideas respectfully (6 minutes)

Step 3: Personal Reflection (4 minutes)

Write down:

- Main points you agree with your partner and why
- Main points you disagree with your partner and why

Activity 6.4 Market Structure Summary - Enoch's Business Journey

Purpose: The purpose of this activity is to help you recall key concepts about market structures through a simple business scenario.

Duration: 15 minutes

Group Size: Individual work, then pair sharing

Instructions

Step 1: Individual task (10 minutes)

Read the scenario carefully and write one word or a short response to the questions below.

Scenario: Enoch's Business Journey

Enoch began selling sachet water in his area with no competition. He made supernormal profits and could set prices freely. Later, many sellers joined, selling identical brands of the sachet water at the same price. The profit for Enoch and other sellers fell to normal levels. Finally, Enoch switched to selling different kinds of flavoured drinks. Now he competes with a few sellers offering slightly different varieties, making normal profits. The government sometimes sets maximum prices for basic goods to help consumers.

Questions

1. When Enoch initially started the sachet water business, what market structure was he operating? (One word)
2. What type of profit did Enoch make initially? (One word)
3. When many sellers joined in selling identical products, what market structure is it referring to? (Two words)
4. What profit do sellers make in perfect competition? (One word)
5. Enoch's current flavoured drinks market is called? (Two words)
6. What are government maximum prices called? (Two words)
7. The law that shows the price and quantity supplied relationship is called? (Three words)
8. When supply is very responsive to price changes, it is? (One word)

Step 2: Pair and compare your answers with a partner and discuss any differences (4 minutes)

Step 3: Agree with your pair and write the correct answers in your notebook.

EXTENDED READING

- Ghana Budget Statements – Ministry of Finance (<https://www.mofep.gov.gh>)



- Ghana Statistical Service (GSS) – Consumer Price Index Reports. (<https://www.statsghana.gov.gh>)



- African Development Bank Report – “Jobs for Youth in Africa” (2019). (<https://www.afdb.org>)



- International Labour Organisation (ILO) – “Minimum Wage Systems in Africa” (2020). (<https://www.ilo.org>)



REVIEW QUESTIONS

1. Why might a government impose a minimum price above the equilibrium level in a market?
2. What is a likely outcome when the government sets a minimum price for maize above the equilibrium level?
3. What is meant by a price ceiling in a market?
4. What challenges might landlords face when the government introduces rent control?
5. What is a common feature of price floors and price ceilings in economic policy?
6. What could be a likely economic result of imposing a minimum price on cocoa and a maximum price on fuel in a country?
7. In 2024, the Ghanaian government introduced a minimum price of GH¢150 per 50kg bag of maize to support local farmers affected by flooding and fire outbreaks. Before the natural disaster, prices had dropped as low as GH¢100, making it difficult for farmers to recover their production costs. The government price gave farmers more security and encouraged continued production. However, the higher price discouraged some petty traders and food processors from purchasing in large quantities as before, resulting in an excess supply of maize in the market. Unsold maize began to pile up, and some farmers struggled to sell their produce. To manage the surplus, the government stepped in to buy large quantities of maize for food security programmes.
 - a. Explain why the Ghanaian government introduced a minimum price for maize in 2024.
 - b. Analyse how the minimum price affected both maize farmers and buyers.
 - c. Evaluate the effectiveness minimum price policy of maize in Ghana. Propose one alternative strategy the government could use to support farmers without creating an excess supply.
8. In 2023, the government of Ghana fixed the rent below the equilibrium price in Accra. Landlords had been charging as much as GH¢2,500 per month for single-room apartments in residential areas. To address this, the government set a maximum rent of GH¢1,800 for such units. This policy aimed to ease the financial burden on tenants and ensure that more people could access decent accommodation. However, this created new challenges. Some landlords withdrew their properties from the market or demanded extra payments illegally. In addition, some real estate developers delayed building new houses because they feared the rent cap would limit their profits. These actions led to a reduced supply of rental housing in many areas within Accra.
 - a. Discuss the main reason(s) for the Ghanaian government introducing a maximum price on rent in Accra.

- b.** Analyse how the maximum price policy affected both tenants and landlords in Accra. What challenges did each group face?
 - c.** Evaluate the impact of the maximum rent price on the housing market in Accra. Suggest one alternative policy the government could use to improve housing access without causing a shortage.
- 9.** In 2023, the Ghanaian government set the price for maize above the equilibrium and the price for petrol below the equilibrium to support farmers and ease the burden on households. The minimum price was set at GH¢180 per 50kg bag of maize to ensure a stable income for local farmers and promote greater agricultural output. At the same time, the maximum price limit on petrol was fixed to stop fuel stations from charging above a certain level, making transportation more affordable for commuters and small businesses. While the maize minimum price boosted farmers' income, it also resulted in an excess supply, as some buyers reduced purchases due to the high price. This led to storage challenges and financial pressure for farmers with unsold produce. The petrol price cap helped consumers cut costs but placed a strain on fuel suppliers, who struggled to meet rising demand while managing reduced margins. This caused occasional shortages and discouraged investment in fuel distribution. Although both measures were introduced to provide support, they also created unintended consequences that called for further policy adjustments to restore market balance.
 - a.** Why did the government introduce a minimum price for maize and a maximum price for petrol in 2023?
 - b.** Explain how the minimum price on maize and the maximum price on petrol created problems for both producers and consumers. What were the main effects on the market?
- 10.** In response to complaints from both maize producers and low-income consumers, the government introduced price regulations in the maize market. A price was imposed above the equilibrium price to assure farmers of stable returns on maize investments. Initially, maize producers welcomed the intervention and increased their output, but they began to encounter difficulties in selling all their maize. Later, the government found that many people were unable to buy. The government later fixed the price below the equilibrium price. This also caused urban shops to face regular shortages of maize as sellers were unwilling to supply at the lower capped price. While these policies aimed to strike a balance between fairness and affordability, concerns have grown about their unintended consequences on market stability.
 - a.** Illustrate the minimum and maximum prices of maize on a diagram.
 - b.** Using the case and the diagram, explain how both minimum and maximum prices can lead to unintended outcomes in the market.
 - c.** Evaluate the long-term consequences of maintaining both price controls in the grain market and suggest an intervention that the government could consider to support both policies.

SECTION

7

MACROECONOMIC
VARIABLES



Macroeconomic Variables (GDP, Inflation, Unemployment, Exchange Rate)

INTRODUCTION

Dear student, you have come a long way in your Economics journey. Hope you are enjoying your lessons. Keep your hopes alive as you learn another interesting topic. In this section, you will build on what you already know by exploring how the economy of an entire country works. You will study key macroeconomic variables such as inflation, employment, and national income, and how each influences the other. You will also learn how changes in spending affect the economy through aggregate expenditure and the multiplier concepts. These ideas will help you understand how one economic action can cause ripple effects across the country. In earlier studies, you read about the economic systems and the main macroeconomic variables. You also studied how changes in these variables affect the economy. You also explored the government policies used to manage these variables and how national income is measured. This foundation has prepared you to understand how different indicators connect and influence the overall performance of the economy.

KEY IDEAS

- Aggregate expenditure is the total amount spent in an economy by consumers, businesses, and the government, showing the overall demand for goods and services.
- Macroeconomic variables such as inflation, unemployment, and GDP are closely connected, meaning changes in one often affect the others.
- The multiplier explains how a small increase in spending can cause a bigger increase in national income, as money flows through the economy.

THE CONNECTION/RELATIONSHIP BETWEEN THE FUNDAMENTAL MACROECONOMIC VARIABLES

Macroeconomic variables are closely related. They influence each other. That is, a change in one affects the other. Understanding these relationships helps in analysing the strength of an economy. The main macroeconomic variables include Gross

Domestic Product (GDP), Inflation, Unemployment, Interest Rates, Exchange Rates, Balance of Payments, and Government Fiscal Position (Budget Deficit/Surplus).

GDP and Unemployment

Okun's Law explains that when GDP rises, unemployment tends to fall, showing an inverse relationship between the two. An increase in GDP leads to an expansion in production, which will cause firms to increase employment. This causes a fall in unemployment. On the other hand, a fall in GDP leads to an increase in unemployment. For example, when Ghana's economy grew strongly between 2017 and 2019, unemployment decreased. However, during the COVID-19 pandemic in 2020, GDP fell, and unemployment rose.

GDP and Inflation

When GDP increases because of higher aggregate demand, it leads to an increase in prices (demand-pull inflation). However, if growth comes from improved technology or efficiency of labour and resources, prices may remain stable.

Inflation and Interest Rates

Central banks increase interest rates to control high inflation and lower interest rates to boost spending and investment. An increase in the interest rate leads to a decrease in the money in circulation, causing inflation to decrease. A fall in interest rates increases borrowing and spending, and as a result, higher inflation. This shows an inverse or negative relationship.

Interest Rates and Exchange Rates

High interest rates attract foreign investors, increasing demand for the cedi and strengthening it. This increases the value of the currency against other foreign currencies. A lower interest rate can lead to capital outflows and a weaker cedi. This causes the value of the currency to depreciate. There is a positive relationship between the interest rate and the exchange rate.

Exchange Rates and Inflation

If the currency loses value (depreciates), imported goods become more expensive, causing an increase in inflation. However, when the currency appreciates, imports become cheaper and affordable. This helps to reduce inflation.

Government Budget and Interest Rates

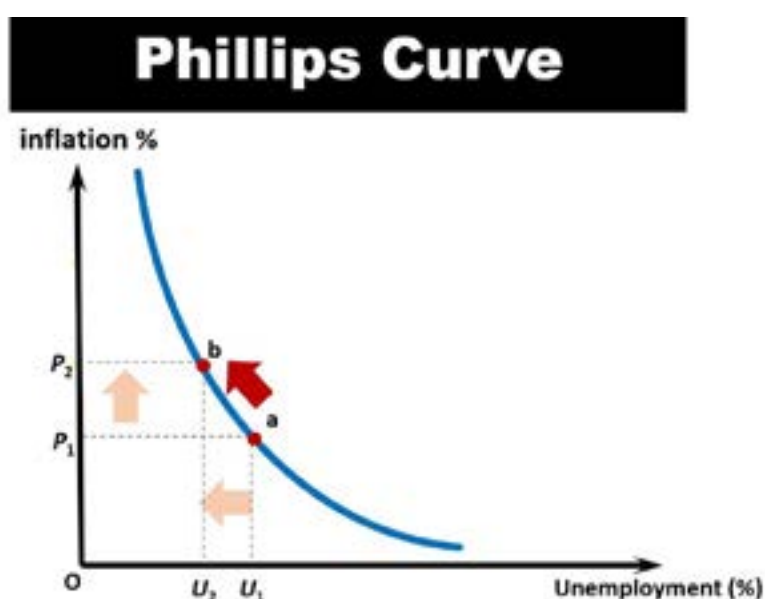
A large budget deficit means the government borrows more, which causes interest rates to increase and investment to decrease (crowding out). If the government prints money to cover the deficit, it may lead to inflation.

Balance of Payments and Exchange Rates

A trade deficit (importing more than exporting) puts pressure on the currency due to a greater demand for foreign currency. This causes the currency to depreciate and a fall in the exchange rate. However, a trade surplus (exports exceed imports) increases the demand for the domestic currency, thereby strengthening the currency and increasing the exchange rate.

Phillips Curve: Inflation vs. Unemployment

This curve shows the relationship between inflation and unemployment. In the short run, a fall in unemployment can lead to higher inflation, and an increase in unemployment will lead to a fall in inflation. In the long run, this trade-off may disappear.



Simple Concept Map of Relationships

GDP $\uparrow$ $\rightarrow$ Unemployment $\downarrow$
 GDP $\uparrow$ $\rightarrow$ Inflation $\uparrow$ (if demand $\uparrow$)
 Inflation $\uparrow$ $\rightarrow$ Interest Rates $\uparrow$
 Interest Rates $\uparrow$ $\rightarrow$ Exchange Rate $\uparrow$ (cedi strengthens)
 Exchange Rate $\downarrow$ $\rightarrow$ Inflation $\uparrow$ (imported goods cost more)
 Govt Budget Deficit $\uparrow$ $\rightarrow$ Inflation $\uparrow$

Activity 7.1: Macroeconomic Variables Connection Project

Purpose: The purpose of this activity is to help you understand macroeconomic variables and their connections through a group research project.

Duration: 2 class sessions (80 minutes total)

Group Size: 4-6 learners per group

Materials needed: Notebook, Pen, Flipchart paper, Markers, Textbooks

Instructions: Read through the project activity before attempting it.

Session 1: Planning & Research

(40 minutes)

Step 1: Individual Review (10 minutes)

Write brief notes on the following themes:

What are macroeconomic variables? (3 minutes)

How do macroeconomic variables affect the economy? (3 minutes)

What is national income?

(2 minutes)

Why is national income important? (2 minutes)

Step 2: Group Formation & Project Planning (10 minutes)

Form groups of 4-6 learners

(3 minutes)

Select one variable to focus on: GDP, Inflation, Unemployment, or Exchange Rate

(2 minutes)

Plan your project tasks (how you will go about this project, where to get information) (5 minutes)

Step 3: Research & Data Collection

(20 minutes)

Research your chosen variable:

Define your variable clearly

(7 minutes)

Find how it connects to two other variables (8 minutes)

Look for Ghana examples

(5 minutes)

Session 2: Project Completion & Presentation (40 minutes)

Step 4: Create Project Output

(25 minutes)

Create a simple poster showing:

Your variable definition (5 minutes)

Two connections to other variables (10 minutes)

One Ghana example (5 minutes)

Why it matters to ordinary Ghanaians (5 minutes)

Step 5: Group Presentations (12 minutes)

Present your project to the class

(3 minutes per group)

Step 6: Class Discussion (3 minutes)

Discuss what you learned about variable connections

AGGREGATE EXPENDITURE

Aggregate expenditure is the total amount spent on final goods and services in an economy over a period, usually a year or a quarter (three months). It is a key concept in macroeconomics that helps explain how national output (GDP) is determined and how the economy reaches equilibrium. The aggregate expenditure model has four main parts as stated below.

Consumption (C)

This is household spending on items like food, clothing, rent, transport and entertainment. In Ghana, this includes spending at markets, shops, and mobile money payments. It accounts for about 60–70% of the total expenditure.

Investment (I)

This involves business spending on capital goods like machines, buildings, and equipment, as well as housing construction and stock of goods. Examples in Ghana include new factories, offices or real estate projects in places such as East Legon or Tema. Investment is important for long-term growth, but it can rise and fall sharply.

Government Purchases (G)

These are all government expenses on goods and services, such as roads, schools, hospitals and salaries of public workers. It does not include transfer payments, such as LEAP or pensions, since they are not payments directly for the exchange of goods and services.

Net Exports (NX)

This is the difference between exports and imports. If exports exceed imports, NX is positive and added to the aggregate expenditure. If imports exceed exports, NX is negative, and it reduces total expenditure.

The formula for Aggregate Expenditure is: $AE = C + I + G + NX$

There is equilibrium in the economy when total spending (AE) equals total output (GDP). If spending exceeds output, businesses will produce more, creating jobs and income. If spending is reduced, businesses reduce production, which can lead to lower employment until the balance is restored.

This model helps economists and policymakers in Ghana to understand how changes in any part of spending can affect the entire economy through multiplier effects, influencing growth, jobs and income levels.

Summary

Symbol	Component	Brief Description	Typical Ghanaian Examples
C	Consumption	Household spending on goods & services	Groceries from a local shop, haircuts and electricity bills
I	Investment	Business spending on capital goods (plus residential construction & inventories)	Building a new warehouse in Accra, purchasing bakery equipment
G	Government Spending	Goods & services purchased by all levels of government	Provision of school textbooks, construction of rural roads
X-M	Net Exports	Exports minus imports	Export of shea butter, cocoa, gold and pineapples minus imports of electronics and rice

Activity 7.2 Understanding Aggregate Expenditure Through Discussion

Purpose: The purpose of this activity is to help you understand aggregate expenditure and its components through structured talk and peer discussion.

Duration: 35 minutes

Group Size: Pairs, then whole class

Materials needed: Notebook, Pen, Calculator (if available)

Instructions:

Step 1: Think and Share on the Components (12 minutes)

Think silently and write down the following: (4 minutes)

- What do you think “aggregate expenditure” means?
- What are the ways people and the government spend money in Ghana?

Pair and Discuss: (6 minutes)

- Share your ideas about aggregate expenditure (3 minutes)
- Together, list four main types of spending in the economy (3 minutes)

Step 2: Calculation Discussion (10 minutes)

Work in pairs to calculate Aggregate Expenditure using this data:

- Household consumption: GH¢500 million
- Business investment: GH¢200 million

- Government spending: GH¢150 million
- Exports: GH¢100 million, Imports: GH¢80 million
- a. Talk through the formula together (2 minutes)
- b. Calculate total aggregate expenditure (5 minutes)
- c. Discuss your answer with another pair (3 minutes)

Step 3: Effect Analysis Discussion (10 minutes)

Discuss in pairs, what happens when:

- a. Households save more and spend less (3 minutes)
- b. Government increases road spending (3 minutes)
- c. Ghana exports more cocoa (4 minutes)

Step 4: Class Sharing (3 minutes)

Share key insights about how changes in the variables affect aggregate expenditure.

THE MULTIPLIER

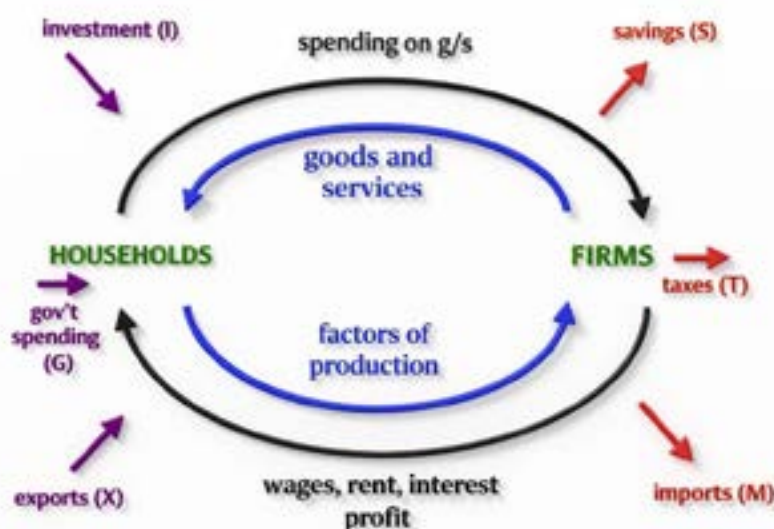
The multiplier measures how much total output (GDP) increases when there is an increase in spending in the economy. When people receive income, they do not spend all of it; they save part of it. The part they spend is called the Marginal Propensity to Consume (MPC), while the part they save is called the Marginal Propensity to Save (MPS). The multiplier illustrates how spending leads to a rise in income and economic activity. For example, imagine the Ghanaian government spends GH¢1 million to build a road in the Ashanti Region. The workers who built the road get paid. They spend their earnings on food, clothing, and other goods in their communities. The sellers who receive that money also spend part of it and save the rest. The total increase in income could become more than the original GH¢1 million.

There are different types of multipliers. These are the investment multiplier, government expenditure multiplier, tax multiplier (usually negative, because taxes reduce spending), export multiplier and balanced budget multiplier.

Key Assumptions (for the simple multiplier model)

1. Prices remain the same (no inflation)
2. The economy has unused resources (spare capacity)
3. No trade with other countries (closed economy)
4. MPC stays constant

Understanding the Circular Flow of Income



The diagram above shows the circular flow of income, which illustrates how money moves through different parts of the economy. It helps us understand how income, spending, and production are all connected.

1. Income, Spending and Output Linkages

In a simple economy, households earn income by working for firms. They then spend that income on goods and services made by those firms. This spending becomes revenue for firms, allowing them to continue producing output and paying wages. The flow continues in a circle.

2. Injections vs. Leakages in the Economy

Not all money stays in this simple flow. Some money leaves the economy; these are called leakages, namely savings, taxes and imports. But money can also enter the economy; these are called injections, namely investment, government spending, and exports. If injections exceed leakages, the economy grows. If leakages are greater, the economy may slow down.

3. Households, Firms, Government, and Foreign Sectors

The economy includes four main sectors:

- Households: supply labour and spend on goods.
- Firms: produce goods and services and pay incomes.
- Government: collects taxes and provides public services.
- Foreign Sector: involves exports and imports with other countries.

Together, these sectors create a full picture of how money flows in and out of the economy.

Introduction to Aggregate Expenditure

Aggregate Expenditure (AE) is the total amount of money spent on a country's goods and services in a given period. It helps us understand how spending affects the economy and national income.

1. Components of Aggregate Expenditure

- a. Consumption (C): Spending by households on things like food, clothing, and transport.
- b. Investment (I): Spending by businesses on machines, buildings, and stocks of goods.
- c. Government Spending (G): What the government spends on schools, roads, hospitals, and salaries.
- d. Net Exports (X – M): The value of exports (goods sold to other countries) minus imports (goods bought from other countries).

2. AE and National Income Equilibrium

The economy is in equilibrium when the total amount spent (AE) equals the total income or output produced. If AE is higher than output, businesses will produce more. If it is lower, they will reduce production.

3. The Role of Autonomous Spending

Autonomous spending is the part of AE that does not depend on income, such as basic government spending or business investment. It helps to initiate economic activity and plays a key role in determining the level of national income.

Marginal Propensities

Marginal propensities show how households respond to changes in income. They tell us how much of any extra income people choose to spend, save, pay as tax, or use to buy imports. These choices affect the overall economy.

1. Marginal Propensity to Consume (MPC): This shows the portion of extra income that households spend on goods and services. For example, if a Ghanaian worker gets a salary increase of GH¢100 and spends GH¢80 on food, transport, and airtime, the MPC is 0.8.
2. Marginal Propensity to Save (MPS): This is the portion of extra income saved rather than spent. For example, if a teacher saves GH¢20 out of a GH¢100 raise, the MPS is 0.2.
3. Marginal Propensity to Tax (MPT): This shows the portion of extra income paid as tax. For example, a formal sector worker may pay GH¢15 in income tax out of an extra GH¢100, giving an MPT of 0.15.
4. Marginal Propensity to Import (MPM)
5. This is the portion of extra income used to buy imported goods. For example, a family may spend GH¢10 from an extra GH¢100 on imported rice or clothes, so the MPM is 0.1.

Each of these propensities helps economists understand how income flows in the economy and how it affects growth.

Understanding the Simple Multiplier

The **multiplier** shows how a small increase in spending can lead to a much larger increase in total income (or output) in the economy. It works because one person's spending becomes another person's income.

The formula for the simple multiplier is:

$$\text{Multiplier} = \frac{1-MPC}{1}$$

Where:

MPC = Marginal Propensity to Consume, the portion of extra income that people spend.

$$1. \text{ MPC} = \frac{\text{Change in consumption } (\Delta C)}{\text{Change in income } (\Delta Y)}$$

$$2. \text{ } 1 - \text{MPC} = \text{Marginal Propensity to Save (MPS)}$$

$$\text{MPS} = \frac{\text{Change in savings } (\Delta S)}{\text{Change in income } (\Delta Y)}$$

Step-by-Step Calculation

Step 1: Identify the MPC. For example, if people spend 60% of their extra income, MPC = 0.6

Step 2: Put the MPC into the formula:

$$\text{Multiplier} = \frac{1}{1-0.6} = \frac{1}{0.4} = 2.5$$

This means that for every GH¢1 of new spending, the total income in the economy could rise by GH¢2.5.

Chain Reaction of Spending

This is how it works:

1. The government builds a school and pays a contractor GH¢1,000.
2. The contractor pays workers, who spend their wages on food and clothing.
3. The sellers earn income and also spend it.
4. This continues, creating a chain reaction of spending and income across the economy.

The multiplier helps us understand how investment or government spending can boost economic growth.

The Open Economy Multiplier

In a real-world economy like Ghana or the UK, people not only save, but also pay taxes and purchase imported goods. These actions reduce the total impact of new spending.

Adjusted Multiplier Formula

The open economy multiplier is:

$$\text{Multiplier} = \frac{1}{MPS + MPT + MPM}$$

- MPS = Marginal Propensity to Save
- MPT = Marginal Propensity to Tax
- MPM = Marginal Propensity to Import

Why Taxes and Imports Reduce the Multiplier

When people get extra income, some of it is saved, some is taxed, and some is spent on foreign goods. These are leakages from the circular flow of income, so less money stays in the economy to keep the spending cycle going.

Case Study

If the Ghanaian government increases spending on roads, local construction firms benefit. But if workers spend a greater portion of their income on imported cement or taxed fuel, less of that money stays in Ghana. As a result, the multiplier effect is weaker than in a closed economy.

The Paradox of Thrift

The Paradox of Thrift occurs when everyone in the economy tries to save more at the same time, especially during difficult times.

What Happens When Everyone Saves?

If all households reduce their spending, businesses sell less, so they decrease production or lay off workers. This leads to lower incomes, which means people cannot save as much as they hoped.

Negative Multiplier and Economic Contraction

Less spending causes a negative multiplier effect: one person's reduced spending becomes another person's lost income. This can lead to a fall in total output and even a recession.

Link to Consumer Confidence

When people feel uncertain about the future (low consumer confidence), they tend to save more and spend less. While saving is necessary for individuals, if everyone does it at once, it can hurt the whole economy.

Applications of the Multiplier

Governments often use the multiplier effect to boost economic activity, especially during periods of slowdown or high unemployment.

Fiscal Policy and Government Stimulus

Governments may increase spending (like building roads or schools) or cut taxes to put more money into people's hands. This is called fiscal policy. The idea is that one person's spending becomes someone else's income, which keeps the economy moving.

Impact on Unemployment, GDP and Inflation

1. The multiplier helps reduce unemployment as more jobs are created from increased spending.
2. It helps raise GDP by increasing total demand for goods and services.
3. But if the economy is already strong, too much spending can cause inflation or rising prices.

When and Why Governments Use It

Governments use the multiplier during economic downturns to boost the economy. When people are losing jobs and businesses are not investing or hiring, the government steps in by increasing spending or cutting taxes. This puts more money into people's hands, encouraging them to spend. As spending increases, businesses produce more goods and services to meet demand and hire more workers. This helps to raise income levels and support economic growth.

Limitations and Real-World Factors

While the multiplier is a useful tool for understanding how spending affects the economy, it has some limitations. In the real world, economies are more complex than the simple models used in theory. Factors such as delays in government projects, changes in interest rates, rising prices and shortages of skilled labour can reduce the actual impact of the multiplier. People may also choose to save or spend differently than expected, which makes predictions less accurate.

Time Lags and Interest Rates

Government projects, such as building roads or hospitals, often involve planning, approval, and construction delays. This means the increase in jobs and spending may not happen immediately; it could take several months or even years. At the same time, if interest rates go up, it becomes more expensive to borrow money. This can discourage businesses and households from investing or spending, which weakens the

Inflation and Supply Constraints

When an economy is already working close to full capacity, additional demand can cause prices to rise instead of increasing production. This is called inflation. If there

are not enough skilled workers, machines or materials available, firms cannot meet the extra demand, and the multiplier effect becomes weaker.

Model Assumptions vs. Reality

The multiplier model assumes that people will always spend extra income in the same way. But in real life, people may change their behaviour. For example, if they are worried about the future, in debt, or prefer to save, they might not spend as much as is expected. This makes the actual outcome different from what the model predicts.

Diminishing Marginal Returns

The first round of government spending has the biggest impact, such as creating new jobs or boosting demand. The subsequent round might do less, especially if workers or equipment are already being fully used. This means that the effect of the multiplier gets smaller over time.

Activity 7.3 Money Multiplier Through Discussion

Purpose: The purpose of this activity is to help you understand the money multiplier concept and the circular flow of income through structured discussions and calculations.

Duration: 50 minutes

Group Size: Pairs

Materials needed: Notebook, Pen, Calculator (if available)

Instructions

Step 1: Circular Flow (12 minutes)

Think and write down: (4 minutes)

- a. How does money move between households, firms, the government, and foreign sectors in Ghana?
- b. What role do injections and leakages play in the flow of income within an economy?

Step 2: Marginal Propensities - Pair Work (12 minutes)

Work in pairs using this scenario:

“Akosua receives a GH¢100 salary increase.

She spends GH¢80, saves GH¢15, and pays GH¢5 in taxes.”

- a. Calculate together (8 minutes):
 - i. $MPC = 80/100 = ?$
 - ii. $MPS = 15/100 = ?$

iii. $MPT = 5/100 = ?$

- d. Discuss what these numbers tell us about her spending behaviour of Akosua (4 minutes)

Step 3: Simple Multiplier Structured Discussion (15 minutes)

Work in pairs to:

- Explain the formula: $1/(1-MPC)$ (5 minutes)
- If $MPC = 0.8$, calculate the multiplier (5 minutes)
- Show step-by-step how GH¢1000 government spending creates a chain reaction (5 minutes)

Step 4: Paradox of Thrift (17 minutes)

In pairs, explore this question:

- “What happens to the economy when everyone in Ghana decides to save more money at the same time?” (6 minutes)
- Share personal experiences about saving vs spending (5 minutes)
- Build on classmates’ ideas respectfully (6 minutes)

Activity 7.4 Quick Review - Your Journey from year 1 to 3

Purpose: The purpose of this activity is to help you quickly review of some of the key concepts from all three years of your economics course through a simple scenario and one-word/ one sentence responses.

Duration: 15 minutes

Group Size: Individual work, then pair checking

Materials needed: Notebook, Pen

Instructions

Step 1: Read the Scenario (2 minutes)

Scenario: Freeman’s Tomato Market

Freeman sells tomatoes in Anloga market. When tomato prices were GH¢5 per bowl, customers bought 100 bowls daily. When prices dropped to GH¢3, demand increased to 150 bowls. At GH¢4 per bowl, Freeman supplies exactly what customers want; 125 bowls. The government sometimes sets maximum prices at GH¢2 to help consumers, but this creates shortages. During harvest season, supply increases and prices fall naturally.

Step 2: Answer Questions (10 minutes) Microeconomic variables. Write one-word answers to the questions below based on the scenario.

Questions

1. When price and quantity demanded move in opposite directions, this shows the law of? (One word)
2. At GH¢4, where supply equals demand, this is called market? (One word)
3. The government's maximum price of GH¢2 is called a price? (One word)
4. When price ceiling creates shortages, excess demand is? (One word)
5. During harvest, increased supply causes prices to? (One word)
6. If tomato supply responds quickly to price changes, supply is? (One word)
7. The point where supply and demand curves meet shows? (One word)
8. When government sets minimum prices above equilibrium, it is a price? (One word)
9. If demand changes from 100 to 150 bowls, this is a demand? (One word)
10. The responsiveness of demand to price changes measures? (One word)

Step 3: Answer Questions (10 minutes)

These questions are based on macroeconomic variables like inflation, GDP, employment, and aggregate demand.

Read this scenario:

Asase is a small but growing country in West Africa. Over the past year, its government has implemented several economic policies to stimulate growth and improve living standards. Recently, the central bank lowered interest rates to encourage investment and consumer spending. Meanwhile, the Ministry of Finance released new data showing a rise in the inflation rate and a steady increase in GDP.

Local businesses are expanding, and households are spending more, though imports have also surged due to demand for foreign goods. Policymakers are analysing aggregate expenditure to understand the drivers of growth and to calculate the multiplier effect of recent fiscal measures. They are particularly interested in how changes in income are affecting consumption patterns and how unemployment trends relate to broader economic performance.

Questions: Write sentence answers to the questions below.

1. What does the inflation rate indicate about the economy of Asase?
2. What does GDP stand for?
3. Name one macroeconomic variable that responds directly to changes in interest rates.
4. List the main components of aggregate expenditure.
5. Identify one factor that can lead to an increase in aggregate expenditure.
6. Write the formula used to calculate the multiplier?
7. If the marginal propensity to consume (MPC) is 0.8, what is the multiplier?

8. Which macroeconomic variable is most closely linked to unemployment?
9. What happens to aggregate expenditure when imports increase?
10. Explain how consumption typically changes as income changes in Asase.

Step 4: Pair and Check (6 minutes)

Compare answers with a partner

EXTENDED READING

- Bank of Ghana (2023) Monetary Policy Report: Inflation and Exchange Rate Developments. Accra: Research Department, Bank of Ghana.
- International Growth Centre (2022). Understanding Ghana's Employment Trends: Labour Market Insights. London: IGC.
- The Economist (2023) Video Documentary: Inflation and Growth – The Global Balancing Act. (<https://www.economist.com/films>) (Accessed: 5 August 2025).



- United Nations Economic Commission for Africa (2021). Macroeconomic Policy and Structural Transformation in Africa. Addis Ababa: UNECA.

REVIEW QUESTIONS

1. True or False Questions

- a. A price floor set below the equilibrium price does not affect the market.
 - b. Price ceilings can lead to shortages in the market.
 - c. The imposition of a minimum price always benefits both consumers and producers equally.
2. If inflation rises while real income remains unchanged, what is the most likely effect on consumers?
3. How does high unemployment affect national income and tax revenue?
4. Give and explain one example of a component of aggregate expenditure.
5. If investment and consumption increase while imports stay constant, what will happen to aggregate expenditure?
6. What is the likely effect of rising interest rates on household consumption?
7. In 2023, Ghana experienced a rise in inflation as fuel and food prices went up sharply. At the same time, interest rates increased as the Bank of Ghana tried to control inflation. Businesses found it more expensive to borrow, so many delayed investments. This led to a slowdown in job creation and a rise in unemployment. With fewer people working, household income dropped and demand for goods and services fell. As a result, the overall growth of the economy slowed down. Policymakers began to worry about how changes in one variable were affecting others, such as how inflation was linked to interest rates and how both influenced employment and growth.
 - a. Explain how the rise in interest rates affected both business investment and employment in Ghana, based on the case study.
 - b. Using the case study, examine how a change in one macroeconomic variable, such as inflation, can lead to changes in other areas of the economy. Give at least two clear examples from the case to support your answer.
 - c. Analyse the possible challenges policymakers in Ghana might face when trying to reduce inflation without increasing unemployment. Use evidence from the case study to support your answer.
8. Kofi owns a bakery in a small town in Ghana. Over the past six months, he has noticed a change in customer spending. When the government increased spending on roads and schools in the area, more people were employed and earned steady incomes. Kofi saw more customers buying bread and pastries each day. He also hired two new workers and purchased two baking equipment. However, when government projects slowed down, customer spending dropped. This affected his sales and forced him to reduce his staff. Kofi realised

that changes in government spending and household income could directly affect his business.

- a.** Explain how government spending affected Kofi's bakery and the spending habits of his customers.
- b.** Evaluate the role of government spending as part of aggregate expenditure. Using Kofi's experience, discuss how such spending can influence employment, business growth and the wider economy over time.

SECTION

8

NATIONAL BUDGET

Concept of Money, Financial Institutions and Public Finance

INTRODUCTION

Have you ever imagined how the government decides what to spend money on and where it gets that money? In this section, you will uncover the answers as you dive into the national budget and how it shapes the economy. You will learn how the government raises money, plans how to spend it, manages national debt, and how taxation affects different groups in society. This will help you understand how budgeting decisions influence economic growth and national development.

Earlier in your studies, you looked at the concept of money and the role of financial institutions in supporting economic activity. You also explored why people hold money, the functions of financial institutions, and the benefits and challenges of taxation. These earlier lessons now come together to help you see how the national budget works as a financial tool to guide the country's development and manage the economy.

KEY IDEAS

- Government expenditure is the money the state spends on public services such as healthcare, education, and road construction to support national development.
- Government revenue is the money it collects from taxes, fees, and borrowing, which is used to fund public services and programmes.
- Incidence of tax shows who pays a tax, the buyer or the seller, depending on how the market responds to the tax.
- National debt happens when the government spends more than it earns, leading it to borrow money to cover the gap.

GOVERNMENT EXPENDITURE

Government expenditure is the total amount of money the government spends to meet the country's expenses. This includes spending by both central and local governments on services such as education, healthcare, roads, and security. It shows how public funds are spent to support economic growth, reduce poverty, and improve living standards in Ghana.

Types of Government Expenditure

1. Recurrent Expenditure

These refer to the regular, ongoing spending by the government or an organisation on items needed for daily operations. These expenses do not create new assets but are necessary to keep existing services running. Examples include paying salaries of teachers and nurses, electricity and water bills for public offices, interest payments on government debt, free SHS meals and learning materials, maintaining public hospitals and schools, fuel for government vehicles and tractors.

2. Capital Expenditure

These are expenditures on long-term investments that help to build or improve infrastructure. Examples are constructing roads, schools and hospitals; building water supply systems and markets; providing irrigation facilities and farm warehouses; electrifying rural communities; purchasing medical equipment or ICT tools for classrooms; setting up industrial parks and technology centres.

Functions of Government Expenditure

1. To provide essential public goods and services like healthcare, education, and security.
2. To promote economic growth through infrastructural development.
3. To reduce inequality by supporting the poor through welfare and subsidies.
4. To ensure national security through military and police spending.
5. To help stabilise the economy during inflation or economic recession.

Examples of government expenditure in the budget include

- a. Funding for Free SHS
- b. Building of CHPS compounds
- c. LEAP provides cash transfers to poor households
- d. Building and maintenance of roads and highways
- e. Expenditure on planting for food and jobs.

Activity 8.1: Tracking Ghana's Spending – Where Does the Money Go?



QR code for Activity 8.1

Scan the QR code above to have access to Activity 8.1

(Your teacher or colleagues can help you scan the QR code)

Step-by-step guide on how to scan a QR code.

 If using a Smartphone (Android or iPhone)

Step 1: Open the camera app and tap on the Google Lens

Step 2: Point the camera at the QR code

- Make sure the QR code is visible in the frame.
- Hold the phone steady.

Step 3: Wait for a pop-up link

- A notification will appear on your screen.
- It usually says “https://docs.google...” or something similar.

Step 4: Tap the link

- This will open the content (video, PDF, website, quiz, etc.) in the browser

 **If the camera does not scan automatically**

Step 1: Download a QR code scanner app

- Go to Play Store (Android) or App Store (iPhone).
- Search for: “QR Code Scanner” or “QR Reader”
- Download a free, trusted app (e.g., “QR Code Reader” by Scan or Kaspersky).

Step 2: Open the QR scanner app

- permit it to use your camera.

Step 3: Scan the QR code

- The app will read the QR code and open the content.

 If using a Tablet PC (Windows or Android)

Step 1: Open the camera or QR scanner app

- Most modern tablets support scanning through the built-in Camera or Google Lens.

Step 2: Point the camera at the QR code

- Hold it steady until it detects the code.

Step 3: Tap the pop-up link

- It will open the webpage, video, or file linked to the QR code.

GOVERNMENT REVENUE

Government revenue refers to the money the government receives to run the country and provide public goods and services. This money comes from several sources, such as taxes, fees, grants, and fines, which are typically referred to as a fiscal year. These monies are used to finance government activities and to promote national development. Government revenue is a major component of the national budget.

Main Sources of Government Revenue

Tax Revenue

These are compulsory payments made by individuals and businesses to the government. Tax revenue consists of direct taxes and indirect taxes.

1. **Direct Taxes:** These are levied on incomes, properties of individuals as well as companies, and are paid directly to the government. These include:
 - a. **Income Tax:** These are taxes levied on the incomes of individuals.
 - b. **Corporate Tax:** These are taxes levied on the profits of companies.
 - c. **Property Tax:** These are taxes levied on properties of individuals and companies.
 - d. **Capital Gains Tax:** This is a tax on the profit made from the sale of assets such as land, buildings, or shares.
2. **Indirect Taxes:** These are taxes levied on goods and services. The tax is included in the price of the commodity and transferred to the consumer in the form of higher prices. These include:
 - a. **Value Added Tax (VAT):** These are levied on the value added in each stage of production. It is paid by the final consumer but collected by businesses on behalf of the government.
 - b. **Import Duties:** These are taxes imposed on imported goods. It is meant to raise revenue and protect infant industries.
 - c. **Excise Duties:** These are special taxes the government places on specific goods, usually those that are harmful to health, luxury items or goods that use a lot of resources. These taxes are charged within the country.
 - d. **Customs Duty:** This is a tax imposed on imported goods to raise revenue and protect local industries.

Non-Tax Revenue

These are revenues the government receives from other sources apart from taxes. These include:

1. **Fees:** These are charges paid to the government for specific services it provides, such as issuing passports, business licenses, building permits, or land registration.
2. **Fines:** These are penalties imposed by the government for breaking laws or regulations, such as traffic offences, illegal mining, or environmental violations.
3. **Dividends from State-Owned Companies:** They are a source of government revenue that comes from the profits made by companies that the government owns. For example, GNPC (Ghana National Petroleum Corporation) earns money from oil deals and pays dividends to the government.
4. **Licenses and Permits:** These are official documents that individuals or businesses must pay for to be able to conduct certain legal activities. The money collected from these payments is a source of revenue for the government. Examples are a Mining permit and a driver's license.
5. **Rent from Government Properties:** Rent from government properties is the money the government earns by leasing or renting out land, buildings, or other properties it owns. An example is renting from the state housing.

Grants and Donations

This is money Ghana receives as support from other countries or international organisations. They are for specific developmental projects. Examples include donations from the World Bank or the IMF

Loans (Borrowing)

This is money the government borrows internally or externally. These are not permanent revenue sources as taxes, but they are often used to support the national budget when revenue from other sources is not enough. Examples include loans from GCB Bank and other countries such as China.

Purposes of Government Revenue

1. To provide public services such as free SHS, building roads in rural areas or running hospitals like Korle-Bu.
2. To pay public workers, including teachers, doctors, police officers and also to pay the national debt.
3. To support national development, such as Building infrastructure like railways, roads, dams or factories.
4. To reduce inequality through programmes like LEAP (Livelihood Empowerment Against Poverty), which supports the poor and vulnerable.

STRATEGIC APPROACHES TO IMPROVING REVENUE COLLECTION IN GHANA

1. Policy and Administrative Reforms

2. **Simplify tax laws:** Streamlining Ghana's tax code—especially around VAT, income tax, and import duties—can reduce compliance burdens and close loopholes exploited in both the formal and informal sectors.
3. **Broaden the tax base:** By formalising segments of the informal economy (e.g., part-time self-employed) and reducing excessive exemptions, the Ghana Revenue Authority (GRA) can capture more economic activity within the tax net.
4. **Strengthen property taxation:** Local governments can improve internally generated funds by updating property registers and enforcing the collection of rates and levies.

Digitalisation and Technology

1. **Expand e-tax platforms:** The GRA's online portal should be made more user-friendly and accessible, especially for SMEs and self-employed individuals.
2. **Integrate mobile money tax systems:** With mobile money deeply embedded in Ghana's financial ecosystem, leveraging it for micro-taxation and compliance tracking can be transformative.
3. **Use biometric and digital ID systems:** Linking tax records to Ghana Card data can reduce fraud and improve taxpayer identification

Institutional Strengthening

1. **Invest in GRA capacity building:** Ongoing training, ethical reinforcement, and performance-based incentives for tax officers can reduce leakages and improve service delivery.
2. **Enhance inter-agency coordination:** Linking GRA, Customs, SSNIT, and Registrar General's Department data can help detect evasion and enforce compliance.
3. **Decentralise revenue collection:** Empowering Metropolitan, Municipal, and District Assemblies (MMDAs) with better tools and oversight can improve local revenue mobilisation.

Public Engagement and Trust

1. **Improve taxpayer education:** Campaigns in local languages, community forums, and school curricula can demystify taxation and build civic responsibility.
2. **Demonstrate visible use of tax revenue:** Transparent reporting and showcasing infrastructure, health, and education projects funded by taxes can build public trust.
3. **Establish feedback and grievance mechanisms:** Allowing citizens to report inefficiencies or corruption anonymously can improve accountability.

NATIONAL BUDGET

National Budget: A national budget is a financial plan prepared by the government that outlines its expected revenue and proposed spending for a specific period, usually a year. It outlines the government's plans to raise funds (primarily through taxation and other sources) and how it intends to allocate these funds to areas such as education, healthcare, infrastructure, and security. The budget outlines the government's priorities and its strategies for promoting economic growth.

Types of government budget

1. **Balanced Budget:** This occurs when the government's estimated revenue is equal to its planned expenditure.
2. **Surplus Budget:** This happens when the government's revenue is greater than its expenditure. It may be used to reduce debt or save for future needs.
3. **Deficit Budget:** This occurs when the government's expenditure exceeds its revenue, often used to stimulate economic growth during slow periods.

Activity 8.2 Understanding Ghana's Revenue – How Government Gets Money

Purpose: To help learners identify types and sources of government revenue and categorise them correctly using real data from Ghana's 2024 National Budget.

Total Duration: 90 minutes (Two 45-minute sessions)

Group Size: 4–5 learners

Approach: Individual Reading ► Group Categorisation ► Group Discussion ► Presentation

PART 1 (45 minutes): Extracting and Categorising Revenue

Step 1: Read the Budget Excerpt (Individual to Pair Work) – 15 minutes

Instructions to Learners

Use your notebook to write the types of revenue, amounts collected or projected, and changes from the previous year based on the data below.

Read the excerpt carefully. Identify each source of revenue, the amount expected in 2024, and whether it increased, decreased, or stayed the same compared to 2023.

Excerpt from Ghana’s 2024 Budget – Revenue Summary

Revenue Source	Projected Amount (GHS Billion)	Change from 2023
Personal Income Tax	21.0	Increased
VAT	24.2	Increased
Import Duties	12.5	Same
Dividends from SOEs	2.0	Slight Increase
Fees & Charges	6.1	Increased
Grants (Donor Support)	3.5	Decreased
Domestic Borrowing	8.5	Increased
Eurobond (External Loan)	2.2	Not Issued
Total Revenue (excluding borrowing): 69.3 billion GHS Total Borrowing: 10.7 billion GHS		

Step 2: Group Categorisation Task (15 minutes)

Instructions to Learners:

Form your groups of 4–5. On a sheet of paper or flipchart, draw a table with four new categories:

- Tax Revenue
- Non-Tax Revenue
- Grants & Aid
- Borrowing

As a group, use the data from the 2024 Revenue Summary Table and decide which revenues fit in to the four new categories. The first one has been done for you since VAT, Personal Income Tax and Import Duties are all sources of tax revenue. Calculate the total amount estimate the overall change (increase or decrease) from 2023.

Example

Category	Revenue Type	Amount (GHS)	Change
Tax Revenue	VAT	57.7 bn	Increased
	Personal Income Tax		
	Import Duties		
Non-Tax Revenue			
Grants & Aid			
Borrowing			

Step 3: Begin Planning Presentation (15 minutes)

Each group starts preparing a short presentation using:

- Flipchart paper
- Coloured pens/crayons OR
- PowerPoint or Canva (if tech is available)

Your first draft should include:

- Your categorised table
- A simple chart or graph showing revenue sources and amounts (bar chart, pie chart, or any format)

PART 2 (45 minutes): Analysing and Presenting Revenue Patterns

Purpose:

To help learners analyse Ghana's main revenue sources and discuss how the country can improve revenue collection.

Step 4: Group Discussion: Analyse the Revenue Data (20 minutes)

Instructions to Learners:

As a group, discuss the following questions. Write your answers as short points to use during your presentation.

1. What are the top three sources of government revenue?
2. Why do you think these sources are prioritised?

3. What are the advantages or disadvantages of relying on:
 - a. Tax Revenue
 - b. Non-Tax Revenue
 - c. Grants or Borrowing
4. Suggest two ways Ghana can improve revenue collection.

Step 5: Finalise your presentation (10 minutes)

Groups add the following to their presentation:

- a. Bullet points answering the discussion questions
- b. One creative visual (e.g., pie chart, infographic, cartoon)

Step 6: Group Presentations (15 minutes)

Each group presents for 5–7 minutes.

Presentation should include:

1. Categoricalised revenue table
2. Chart or visual showing sources and amounts
3. Answers to the four discussion questions
4. Group's creative visual aid

NATIONAL DEBT

National debt (also called public debt or government debt) is the total amount of money the government owes to lenders, both domestic and foreign. It consists of loans the government has taken over time, both from within Ghana and from outside the country.

Governments borrow money when the government expenditure is more than the revenue (budget deficit). Borrowing can promote national development or provide relief during crises, but if not properly managed, excessive debt may lead to long-term challenges.

Types of National Debt

1. Domestic Debt: This is money the government borrows from people or institutions within Ghana. Examples are treasury bills and government bonds purchased by banks, companies, or individuals in Ghana.
2. External (Foreign) Debt: This is money borrowed from outside Ghana, such as from foreign governments, international organisations, or global financial markets. Examples include Eurobonds issued by Ghana, or loans from the IMF or World Bank.

Why Do Governments Borrow?

1. To build infrastructure like roads, schools, and hospitals.
2. To pay salaries and keep essential services running when revenue is low.
3. To respond to emergencies, such as the COVID-19 pandemic.
4. To repay or refinance old loans (debt servicing).

Effects of National Debt

Positive Effects:

1. It can promote economic growth if used wisely (e.g., building productive assets).
2. It helps the government to manage short-term financial gaps.

Negative Effects:

1. High interest payments may reduce funds for education, health and roads.
2. Too much debt can cause loss of investor confidence and reliance on foreign aid.
3. Poor debt management can lead to inflation, currency depreciation or a weaker cedi.

Examples in Ghana

In recent years, Ghana's national debt, which is made up of both domestic and foreign debt, has been very high. This has caused:

1. Rising interest payments on the debt.
2. The need for IMF bailouts and debt restructuring plans.
3. Public concern about debt sustainability, whether Ghana can continue to pay back its debt without any problem, such as an increase in taxes.

Activity 8.3 Exploring Ghana's National Debt Using Real Budget Data

The purpose of the Activity is to help learners identify and distinguish between different types of public debt (domestic and external) organise and present national budget debt data using appropriate tools.

This activity is in two phases (Phase 1 and Phase 2).

Duration: 60 minutes

Resources/Materials

- Printed summary of Ghana's national debt data (2019–2023)
- Exercise books or worksheets
- Pens/pencils

- Laptops with Microsoft Excel (or graph paper if Excel is not available) or any other means for data representation.

Phase 1: Individual Work (15 minutes)

Title: Interpreting National Debt Figures (2019–2023)

Instructions

Study the table below. Then answer the short-answer/supply-type questions that follow.

Ghana's National Debt Summary (2019–2023)

(Data simplified for classroom use)

Year	Total Debt (GHS Billion)	Domestic Debt (GHS Billion)	External Debt (GHS Billion)	Debt-to-GDP Ratio (%)
2019	218.2	105.4	112.8	62.4
2020	291.6	149.8	141.8	76.1
2021	344.5	181.8	162.7	80.1
2022	434.6	248.3	186.3	88.1
2023	567.3	328.2	239.1	91.3

Individual Questions (Short Answer/Supply Type)

Fill in the blanks or answer in brief:

1. What was the total national debt in Ghana in 2020? _____
2. In which year was Ghana's debt-to-GDP ratio highest? _____
3. What was the value of external debt in 2021? _____
4. Which year recorded the highest increase in total debt compared to the previous year? _____
5. Identify the year in which domestic debt was less than external debt.

Phase 2: Group Collaboration (40 minutes)

Title: Analysing and Visualising Ghana's Debt Trend

Instructions for Group Work:

Form small groups (3–4 learners). Using the **data above**, perform the following tasks:

Step 1: Record and Organise Data

Enter the data from the table into **Microsoft Excel** under these headings:

- Year

- Total Debt (GHS billion)
- Domestic Debt (GHS billion)
- External Debt (GHS billion)
- Debt-to-GDP Ratio (%)

(If Excel is unavailable, sketch out the table.)

Step 2: Create Visual Charts

1. Create a line graph showing the trend in total debt from 2019 to 2023.
2. Create a clustered bar chart comparing domestic and external debt each year.
3. (Optional) Create a pie chart showing the share of domestic and external debt in any one year of your choice.

Step 3: Group Discussion and Analysis

Discuss and answer these guiding questions:

1. What trend do you observe in Ghana's national debt over the five years?
2. Which type of debt (domestic or external) contributes more to the total debt?
3. What economic or social factors may have influenced the increase or decrease?
4. How could a rising debt-to-GDP ratio affect Ghana's development (e.g., education, roads, jobs)?

Step 4: Presentation

Each group will present:

- a. Your two charts
- b. A brief oral summary (5–7 minutes) of your interpretation of the data and your answers to the questions

INCIDENCE OF TAXATION

The incidence of taxation refers to who carries the burden of a tax. It is not about who pays it to the government, but about who carries the tax burden. It helps us understand how the burden of a tax is shared between consumers, producers, or workers.

Example 1

For instance, if the government imposes a tax on petrol, petrol stations may increase their prices to cover the added cost. As a result, consumers end up paying more at the pump. Although the tax is paid to the government by the petrol stations, the actual burden is shared between the consumers (who pay higher prices) and the businesses (who may see reduced sales or lower profits).

Example 2

Suppose the government places a tax on soft drinks. To maintain their profit margins, manufacturers may raise the price of their products. Retailers then sell the drinks at higher prices. In the end, consumers pay more, bearing part of the tax burden, while producers may also absorb some of the cost through reduced profits if they cannot pass on the full tax.

Economists, therefore, look at who legally pays the tax and who bears the cost. These are called legal incidence and economic incidence.

Key Concepts

1. Legal Incidence

This is the person or business required by law to pay the tax to the government. For example, an oil company is legally required to pay fuel tax.

2. Economic Incidence

This is the person or group that eventually bears the cost of the tax. For example, if the oil company increases fuel prices, then drivers and passengers bear the real burden of the tax.

How Tax Incidence Works

When a tax is imposed, the person who pays it initially may not be the one who feels the full cost. The tax burden can shift between producers and consumers through price changes. If a tax is imposed on producers (like businesses), they may increase the prices of their goods to cover the tax. This means consumers will end up paying more.

If the tax burden is transferred to consumers, they may buy less because the product becomes expensive. This will force producers to lower their prices to keep selling, hence sharing part of the burden.

Types of Tax Incidence

1. **Forward Shifting:** This happens when a business passes the tax to consumers by increasing the price of goods or services. For example, if VAT (Value Added Tax) is imposed on soft drinks in Ghana, the seller may increase the price, so buyers pay more.
2. **Backward Shifting:** This happens when a business passes the tax backward to workers or suppliers by reducing wages or cutting costs. For example, a factory in Accra may lower workers' salaries or pay farmers less if their tax bill increases.
3. **Absorption:** This is where the business does not pass the tax on to anyone. Instead, it pays the tax itself, reducing its profit. For instance, a small kenkey seller might choose not to raise prices after a new tax is introduced on maize, instead accepting to sell at her regular price and earn a lower income or profit.

What Determines Who Bears the Tax?

1. The one who feels the real burden of a tax depends on the price elasticity of demand.
2. If demand is inelastic (consumers cannot easily stop buying), then consumers bear more of the tax. For example, even when the price of petrol rises, people continue to buy it because it remains a necessity.
3. If supply is inelastic (producers cannot easily produce less or change what they do), then producers bear more of the tax. For example, Cocoa farmers may have no choice but to keep selling at lower prices if a new tax is added.
4. If consumers can easily switch to alternative products, producers may be forced to absorb more of the tax. For example, when a tax is added to bottled water, but sachet water remains untaxed and widely available, many consumers may switch to sachet water. As a result, bottled water sellers cannot raise prices and must bear more of the tax themselves.

Example: Soft Drink Tax

- a. The government imposes a tax on soft drink manufacturers like Coca-Cola or local bottling companies. These companies are responsible for paying the tax to the government. This is the legal incidence.
- b. However, if the companies raise the prices of their drinks to cover the tax, then consumers who buy the soft drinks end up paying more. This is the economic incidence, as the consumers feel the real burden of the tax.

General Formula for Tax Incidence

Consumer's Share of Tax Burden:

$$\text{Consumer Tax Incidence} = \frac{P_{\text{After}} - P_{\text{Before}}}{\text{Tax per Unit}} \times 100\%$$

Producer's Share of Tax Burden:

$$\text{Producer Tax Incidence} = \frac{\text{Tax per unit} - (P_{\text{After}} - P_{\text{Before}})}{\text{Tax per Unit}} \times 100\%$$

Where:

- P_{Before} = Price before tax
- P_{After} = Price after tax
- Tax per unit = The amount of tax imposed per unit of the good

Example

Suppose:

- Price before tax = GH¢50
- Price after tax = GH¢55
- Tax per unit = GH¢20

Then:

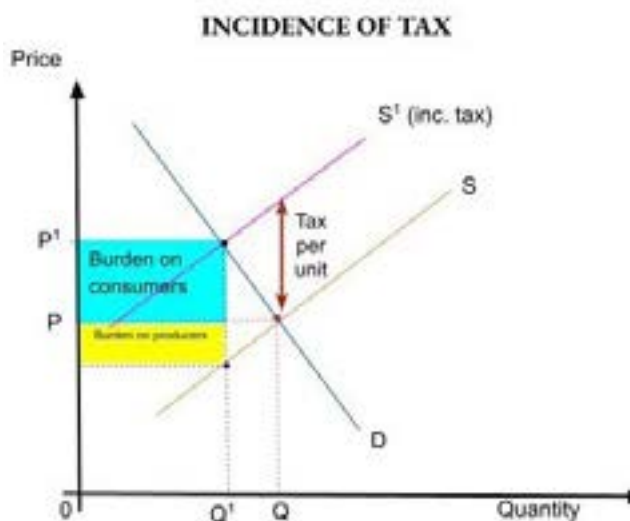
Consumer's Tax Burden

$$\frac{55-50}{20} \times 100\% = \frac{5}{20} \times 100 = 25\%$$

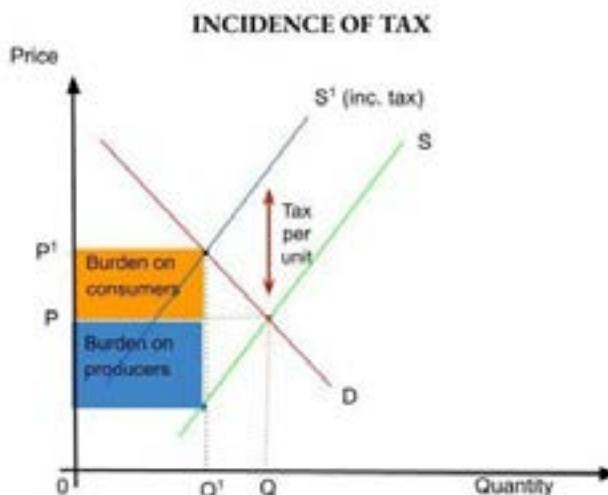
Producer's Tax Burden:

$$\frac{20 - 55 - 50}{20} \times 100\% = \frac{3}{4} \times 100 = 75\%$$

So, **consumers bear 25%** of the tax and **producers bear 75%**.



This diagram illustrates the incidence of tax, showing how the burden of a tax is shared between consumers and producers. When a tax is imposed, the supply curve shifts from S to S^1 , increasing the price from P to P^1 and reducing the quantity from Q to Q^1 . The blue shaded area represents the burden on consumers, who pay more for the product. The yellow shaded area shows the burden on producers, who receive less revenue per unit sold. In this case, the consumer burden is greater, as the blue area is larger. The vertical distance between the two supply curves represents the tax per unit.



This diagram shows how the burden of a tax is shared between consumers and producers, known as the incidence of tax. When a tax is introduced, the supply curve shifts from S to S^1 , causing the price to rise from P to P^1 and quantity to fall from Q to Q^1 . The orange area represents the burden on consumers, who now pay a higher price than before, while the blue area shows the burden on producers, who receive less revenue after the tax is deducted. In this case, the producer's burden is greater, as shown by the larger blue area. The vertical gap between the original and new supply curves represents the tax per unit.

Activity 8.4 Who Pays the Tax? – Exploring Tax Incidence Through a Case Study

Purpose of the Activity: To help learners understand how the burden of taxation is shared between producers and consumers, we use a real-life economic case study. Learners will calculate, draw, analyse and present findings on tax incidence and its effects on economic behaviour and national development.

Total Duration: 90 minutes (Two 45-minute sessions)

Group Size: 4–5 learners

Approach: Case Study ► Group Calculation ► Visualisation ► Analysis

Part A: Calculation Task (45 minutes)

Step 1: Case Study Calculation (15 minutes)

Instructions to Learners

Read the case study and calculate the tax burden.

Case Study: The government has imposed a GH¢5 per unit tax on soft drinks.

- Before the tax: price = GH¢15, quantity demanded = 1,000 units/week
- After the tax: price = GH¢18, quantity demanded = 800 units/week

Tasks

- i. How much of the GH¢5 tax is paid by the consumer?
- ii. How much of the tax is absorbed by the producer?

Step 2: Tax Incidence Diagram (30 minutes)

Instructions to Learners (in Groups)

Draw a labelled diagram using Excel, paper, or PowerPoint. Your diagram should show:

- i. Pre-tax and post-tax equilibrium (price and quantity)
- ii. Vertical Tax wedge (difference between buyer's price and seller's price)
- iii. How the tax burden is split between consumers and producers.

Note: Make sure to label axes: Price (Y-axis) and Quantity (X-axis) and use arrows or colours to show demand and supply curves.

Part B: Analysis and Presentation (45 minutes)

Step 3: Analyse Tax Incidence (25 minutes)

Group Discussion Questions based on answers from Part A

Instructions:

Write your answers as short bullet points for presentation.

- a. Who bears more of the tax – producer or consumer?
- b. What factors determine who bears more of the tax?
- c. What could be the possible effects of this tax on:
 - i. Employment in the beverage industry?
 - ii. Investment decisions by producers?
 - iii. Consumption behaviour of buyers?

Step 4: Prepare a slide show or flip chart (20 minutes)

Instructions to Learners (Group Task)

Prepare a PowerPoint or flipchart with the following 5 slides or sections:

Slide	Content
Slide 1	Title + Brief Case Study Summary
Slide 2	Calculated Tax Burden (GH¢ paid by consumer vs producer)
Slide 3	Diagram showing tax incidence and tax wedge
Slide 4	Bullet-point analysis and conclusion on slide 3 diagram
Slide 5	Policy Advice: Should the government maintain , remove or adjust the soft drink tax? Give reasons.

Class Engagement After Presentations

After each group presents, learners should ask questions to seek clarification.

EXTENDED READING

- Ghana Revenue Authority. (2023). Understanding tax obligations in Ghana. Accra: GRA. Retrieved from <https://gra.gov.gh>



- African Development Bank. (2022). Fiscal policy and economic growth in Africa. Abidjan: AfDB. Retrieved from <https://www.afdb.org/en/documents>



- African Tax Administration Forum. (2023). Improving tax compliance in Africa. Pretoria: ATAF. (<https://www.ataftax.org>)



- International Monetary Fund. (2021). Taxation and development: A global perspective. Washington, DC: IMF. (<https://www.imf.org>)



- World Bank. (2020). Price controls and market efficiency. Washington, DC: World Bank. (<https://www.worldbank.org>)



REVIEW QUESTIONS

1. The government launched a road construction project at Effiduasi in the Ashanti region and spent GH¢1 million on wages and materials. Local workers who were hired used part of their income to buy food, clothes and household items. Shops in the area reported increased sales and hired more staff. Economists observed that for every GH¢1 spent by the government, an additional GH¢2.50 was generated in the local economy through increased spending. An analysis showed that the marginal propensity to consume (MPC) at Effiduasi was 0.71.
 - a. Using the MPC of 0.71, calculate the value of the multiplier. Show your working.
 - b. Examine how the initial government spending led to further increases in income and employment in the Effiduasi area.
 - c. Evaluate the long-term effects of increased government spending on income and economic activity in developing towns like Effiduasi.
2. Explain the difference between recurrent and capital expenditure in a national budget.
3. Describe two ways the government of Ghana generates non-tax revenue.
4. Why might a government choose to run a deficit budget during an economic slowdown?
5. Briefly explain the purpose of national debt in government financial planning.
6. Identify one example each of direct and indirect taxes used by the Ghanaian government and explain how they differ.
7. Explain how the incidence of tax is shared between producers and consumers when a government imposes a tax on a product.
8. The table below shows the projected government expenditure and revenue for the 2025 fiscal year in Ghana. Use it to answer the questions that follow.

Expenditure Item	Amount (GH¢ million)
Salaries and Wages	45,000
Infrastructure Development	30,000
Interest on Public Debt	18,000
Education Subsidies	12,000
Health Sector Support	10,000
Administrative Services	5,000

Revenue Item	Amount (GH¢ million)
Income Tax	30,000
Corporate Tax	25,000
Import Duties	10,000
Value Added Tax (VAT)	15,000
Petroleum Revenue	8,000
Non-Tax Revenue	7,000

- a. Calculate the total government expenditure.
 - b. Calculate the total government revenue.
 - c. Determine whether the government has a budget surplus or deficit and explain its impact on the economy.
9. In 2025, the government of Ghana planned to increase spending on key sectors to support national development. A large portion of the budget was allocated to pay the salaries of teachers and health workers. Additional funds were directed towards building roads and improving public transport. The government also spent on maintaining public offices and supporting free education in basic and secondary schools. These expenditures were aimed at improving services for citizens and boosting economic growth.
 - a. Explain three reasons why the government spent money on infrastructure and public services.
 - b. Discuss how government spending on education and health workers can benefit the country.
10. In 2025, the government of Ghana aimed to raise money to fund its national development plans. The main sources of revenue were taxes collected from individuals and businesses. These included income tax, corporate tax, and value-added tax. The government also received money from import duties, petroleum levies, and non-tax sources such as licences and fines. This revenue was essential for providing public services and running the country effectively.
 - a. Explain three sources of revenue the government of Ghana collected in 2025.
 - b. Explain how income tax and corporate tax contribute to government revenue.
 - c. Describe three reasons why government revenue is important for national development.
11. By the end of 2023, the government of Ghana had borrowed large sums of money to support its spending on roads, education, and healthcare. Some of the loans came from local banks, while others were from international lenders.

Although the borrowed money helped to complete important projects, the government now faces high interest payments. This has raised concerns about how the country will repay the debt and still meet the needs of its people.

- a.** Analyse how borrowing from both local and international lenders can affect Ghana's economy.
- b.** Evaluate the long-term impact of rising national debt on Ghana's ability to provide public services.

SECTION

9

AGRICULTURE AND INDUSTRIALISATION



Agriculture, Industrialisation, And Trade

INTRODUCTION

Welcome to the final part of your Economics journey at Senior High School! By now, you should appreciate that Economics is about making choices that help individuals and communities to live comfortably and manage resources wisely.

Did you know that farming and factories depend on each other, and that Ghana's economy is closely connected to global trade? In this section, you will explore how agriculture and industry are linked, the challenges facing industrial growth, and strategies to address them. You will also learn about trade within and beyond Ghana, including how countries benefit from trade, the difference between comparative and absolute advantage, and how to calculate exchange rates. These ideas build on what you have already studied. You previously examined the roles and challenges of agriculture, industry, and services in Ghana's economy and the basics of international trade. This knowledge now supports your understanding of how sectors interact and how trade promotes development.

KEY IDEAS

- A country has a comparative advantage when it can produce a good at a lower opportunity cost, while an absolute advantage means it can produce more of it than others. Opportunity cost is what must be given up to produce one good instead of another.
- Agriculture and industry are connected because farming provides the raw materials that factories use to produce finished goods.
- Exchange rates show how much one currency is worth in another, helping people and businesses trade across countries.
- Free and external trade allows countries to sell their goods abroad and buy what they cannot produce locally, expanding markets and choice.
- Industrialisation often struggles with problems like poor roads and unreliable power, but these can be solved through better planning and investment.

THE LINK BETWEEN AGRICULTURE AND INDUSTRY

Agriculture and industry are closely connected and depend on each other to help the economy grow. Both sectors serve each other. For example, farmers grow cocoa and factories convert it into chocolate or cocoa butter for export. If there is an improvement in Agriculture, more raw materials will be available for industries. If factories operate efficiently, they produce tools, fertilisers, and machinery that support farmers in increasing their output. For a country like Ghana to develop, the link between Agriculture and industry must be strong. This will create more jobs, reduce waste, and promote economic growth. If this link is weak, raw materials may be wasted, factories might face input shortages, and unemployment could remain high.

How Agriculture Supports Industry

Agriculture → Industry	Explanation
Supply of Raw Materials	Agriculture provides industries with raw materials. For example, tomatoes for making canned tomato paste, shea nuts for body creams, and sugarcane for sugar.
Market for Industrial Goods	Farmers purchase inputs produced by industries, which include tractors, pesticides, irrigation pumps, and packaging materials.
Labour Supply	Surplus labour from rural agriculture often migrates to urban areas for industrial jobs.
Capital Formation	Incomes earned from Agriculture can be used to start agro-processing businesses such as gari or fruit juice production.
Food Supply	Agriculture provides food (like rice, vegetables, and meat) to feed factory workers, helping them stay healthy and productive.

How Industry Supports Agriculture

Industry → Agriculture	Explanation
Provision of Farm Inputs	Industries produce equipment like hoes, tractors, fertilisers, and chemicals that help farmers grow more crops.
Processing of Agricultural Products	Industries add value by processing raw farm produce into finished goods (e.g., tomatoes into canned paste).
Storage and Packaging	Industries provide bags, refrigeration, and silos to store crops like maize or onions, which reduce spoilage. This will reduce post-harvest losses.

Transport and Communication	Infrastructure, which includes roads, trucks, and mobile networks developed by the industrial sector, makes it easier for farmers to transport their goods to markets.
Research and Innovation	Industries, through their research, help create better seeds, drip irrigation systems, and farming apps to improve crop yields.

Why the Link is Important in Ghana

1. It helps add value to raw materials and promotes the establishment of agro-processing industries.
2. It reduces poverty in rural areas and employs the youth.
3. It helps to improve food supply and increases earnings from exports.
4. It ensures equal growth in both Agriculture and industry.

Example in Ghana

Oil Palm cultivation in the Western Region is processed into palm oil and other derivatives by companies like Ghana Oil Palm Development Company.

Shea Nut Collection in Northern Ghana is processed into shea butter by companies such as Savannah Fruits Company and StarShea Ltd.

Activity 9.1 Exploring the Link Between Agriculture and Industry

The purpose of this activity is to help learners apply their knowledge of how agriculture and industry depend on each other in Ghana, using real-world examples and observations.

Materials Needed

- Notebook and pen/pencil
- Field trip observation sheet or video viewing guide
- Smartphone or tablet (optional, for recording or taking pictures)
- Chart paper or PowerPoint (for final presentation)

Duration: 45 minutes

Instructions for Learners

Step 1: Recap (10 minutes)

In pairs, recall and write short notes on

- a. Two (2) ways agriculture supports industry.
- b. Two (2) ways industry supports agriculture.

Step 2: Prepare to Observe (5 minutes)

In pairs, choose one of the following options:

Option A: Embark on a field trip to a farm and agro-processing site.

Option B: Watch a short documentary or video on farming and agro-industry in Ghana. [Scan the QR code below to watch the documentary]



Figure 1: Short Documentary: Agroecology & The FISP Program [VIDEO]

Step 3: Guided Observation (20 minutes)

As you watch the video or walk through the site, use your notebook to answer:

- a. What products are produced on the farm?
- b. Which of these products are used by industry?
- c. What machines or inputs are used on the farm that come from industry?

Step 4: Group Discussion and Creative Presentation (10 minutes)

Join a group of 4–5 and:

- a. Share your observations
- b. Draw a simple diagram or create a short PowerPoint/poster showing how agriculture and industry support each other
- c. Use arrows to show the flow of resources between sectors
- d. Add at least one example from Ghana

CHALLENGES AND SOLUTIONS OF INDUSTRIALISATION

Industrialisation is the process by which a country transforms its economy from primarily agriculture-based to one dominated by manufacturing and industrial activity, aiming to increase production, create employment, and promote economic growth.

Industrialisation plays a vital role in Ghana's development. It aims at creating jobs, and to increase exports, reduce poverty, and transform the country from being mainly agricultural to a more modern economy. However, Ghana faces several challenges that slow down industrial growth. With good planning, investment in infrastructure and people, and support from both the government and private companies, Ghana can sustainably grow its industries.

Challenges of Industrialisation

Challenge	Explanation
1. Inadequate Infrastructure	Many rural roads are in bad condition, power outages are common (dumsor), and the water supply is not reliable. These make it hard for factories to operate smoothly.
2. Inadequate Capital	Local businesses and the government often lack sufficient funds to build factories or invest in modern machinery.
3. Shortage of Skilled Labour	There are not enough trained technicians, engineers and machine operators. This affects industrialisation.
4. Overdependence on Imported Raw Materials	Some factories import raw materials (e.g., flour, chemicals) from abroad instead of using local ones, which makes production expensive.
5. Limited Domestic Market	Low incomes and small populations reduce the demand for locally manufactured goods.
6. Poor Maintenance Culture	Many factories do not service their machines regularly. This causes breakdowns and delays.
7. Environmental Degradation	Some industries release dirty water, smoke, or noise, which pollutes the environment and affects people's health.
8. Political and Policy Instability	When governments change, policies also change. This confuses investors and discourages long-term planning.
9. High Cost of Production	When electricity prices, fuel, and taxes are high, it makes it expensive to produce goods locally.
10. Competition from Foreign Goods	Cheaper imported products (such as rice, clothes, or electronics) make it hard for Ghanaian-made goods to sell well.

Solutions to the Challenges

Solution	Explanation
1. Improve Infrastructure	Build better roads, provide stable electricity (no more dumsor), and improve water supply to help factories run efficiently.
2. Access to Affordable Credit	Banks and institutions such as the Ghana EXIM Bank should grant low-interest loans and grants to small businesses and new industries.
3. Expand Technical and Vocational Education	Train more skilled workers through TVET institutions and apprenticeships.
4. Strengthen Agro-Industrial Linkages	The use of local raw materials should be encouraged to reduce the over-reliance on imports.
5. Promote Export Markets	The country must join trade organisations like the African Continental Free Trade Area (AfCFTA) to promote local products on the international market.
6. Encourage Public-Private Partnerships (PPP)	The government must work together with the private sector to promote industrialisation.
7. Enforce Environmental Regulations	The state must ensure industries follow regulations that protect the environment and encourage the use of clean and green technologies.
8. Provide Tax Incentives	The government must reduce taxes for local industries and offer tax holidays to new industries to attract investors.
9. Maintain Political Stability	The government should formulate long-term industrial policies, irrespective of changes in government, to support local manufacturing.
10. Promote Made-in-Ghana Products	Campaigns like “Wear Ghana” and “Eat Ghana” should be encouraged to promote the consumption of local products.

Examples in Ghana

1. Accra Digital Centre (ADC), a technology centre in Accra that gives office space and support to young people and companies working in ICT and digital businesses.
2. Business Resource Centres (BRCs) under the Ministry of Trade and Industry (MoTI) have set up centres in many districts to help small factories with training, business advice, and access to markets.

3. Ghana Free Zones Authority (GFZA) helps companies that export goods by giving them benefits like tax reductions and free import of machines. For example, Blue Skies in Nsawam uses this support to process fruits for export.

Activity 9.2 Solving the Challenges of Industrialisation in Ghana

The purpose of the activity is to help learners identify, understand, and solve challenges of industrialisation in Ghana through peer-led research, group discussions, and feedback.

Duration: 60 minutes

Materials Needed

- Notebook and pen/pencil
- Plain paper or cardboard for challenge cards
- Flip chart sheet or large notebook page for summaries
- Markers or pens for group presentation

Instructions for Learners

Step 1: Create the Challenge Cards (10 minutes)

- a. In your group, write down ONE major challenge Ghana faces in industrialisation.
- b. Write the name of the challenge as the title on top of a sheet.
- c. Below it, write the following 4 guided questions (leave space for responses):
 - i. What does this challenge mean in your own words?
 - ii. Why does this challenge exist in Ghana?
 - iii. What effect does it have on industries?
 - iv. What solutions could work in the Ghanaian context?

NB: Ensure each group works on a different challenge.

If you need help thinking of challenges, refer to your notes, Learner Material, or previous class discussion.

Step 2: First Group Brainstorm (10 minutes)

Each group now discusses and writes answers to the 4 questions on their self-made challenge card.

Step 3: Rotate and Build (20 minutes)

- a. Pass your challenge card to the next group.
- b. Read what the previous group wrote.

- c. Then:
 - i. Add new or deeper ideas
 - ii. Ask questions if something is unclear
 - iii. Suggest better or alternative solutions
 - iv. Link to other sectors (e.g., how education, agriculture, or ICT could help)

Rotate every 5 minutes so each group contributes to at least 3–4 different challenges.

Step 4: Review and Summarise (10 minutes)

Return to your original card. Your group now:

- a. Reads all added responses
- b. Summarise the key points
- c. Highlights:
 - i. New ideas you did not think of before
 - ii. Solutions you found most useful
 - iii. How has your thinking changed or improved upon reading the answers from your colleagues?

Step 5: Present (10 minutes)

Create a small poster or oral report summarising:

- i. Your challenge
- ii. Best ideas and solutions
- iii. How group contributions improved your understanding
- iv. One real example from Ghana (e.g., 1D1F, Ghana EXIM Bank)

Present briefly to the class (2 minutes per group).

FREE AND EXTERNAL TRADE

External trade refers to the exchange of goods and services between two or more countries. In Ghana, this includes all trade between Ghana and other countries such as China, the USA, Nigeria, and Germany. This type of trade is also called international trade or foreign trade.

Types of External Trade

Type	Description
Import	Buying goods/services from another country (e.g., Ghana imports rice from Thailand).
Export	Selling goods/services to another country (e.g., Ghana exports Gold to India).
Re-export	Importing goods into a country and then exporting them again without much change in the product (e.g., Ghana re-exports petroleum products to neighbouring countries).

Free trade is a type of external trade in which countries exchange goods and services without restrictions or barriers. This means there are no tariffs, quotas, or bans. Goods, services, and capital can move freely across borders.

Key Features of Free Trade

Feature	Explanation
There are no tariffs	Countries do not impose taxes on imported goods.
There are no quotas	There is no limit on the amount of goods imported or exported.
There is open competition	Foreign and local producers compete in the same market.
It encourages specialisation	Countries specialise in producing goods in which they are efficient or have a competitive advantage.

Difference between Free Trade and External Trade

Feature	Free Trade	External Trade
Meaning	Trade without restrictions between countries	Any trade between countries may or may not be restricted.
Involves Rules?	There are few or no restrictions, such as tariffs or quotas.	There are restrictions such as tariffs, quotas, and other controls
Focus	It promotes open markets and global integration	It includes all trade activities with other countries.
Example	Ghana trades duty-free with ECOWAS members	Ghana is importing automobiles from Japan with restrictions such as tariffs

Examples in Ghana

1. External Trade: Ghana exports gold to Europe and imports cars, rice, and machinery from countries like Japan and China.
2. Free Trade: Ghana is a member of AfCFTA (African Continental Free Trade Area), so it can trade freely with other African countries without paying import duties.

Why It Matters

Both external trade and free trade help a country to:

1. Access goods that are difficult and expensive to produce locally (e.g., Ghana imports cars or fuel).
2. Earn foreign exchange by exporting goods like cocoa and gold.
3. Boost economic growth by allowing countries to have access to bigger markets.
4. Create jobs, especially in export industries like farming, mining, or manufacturing.

NB: Free trade and external trade can help a country to grow by creating more business and job opportunities, but they also come with challenges. For Ghana to develop in a strong and lasting way, the government must carefully balance opening up trade with protecting and supporting local industries.

Advantages of External and Free Trade

Advantage	Explanation
It allows countries to have access to a variety of Goods	Countries can get goods and services they do not produce locally (e.g., Ghana imports automobiles and electronics).
It promotes specialisation and efficiency	Each country focuses on producing what it does best, improving quality, and lowering costs.
It helps to create jobs and incomes	Exporting industries provide employment and bring income to producers.
There is an inflow of foreign exchange	Exporting goods brings in valuable foreign currencies (e.g., dollars, euros).
It encourages innovation and competition	Local businesses work harder to improve their products and keep prices low, so they can compete with goods from other countries.
It promotes economic growth	External trade increases national income and helps develop key sectors such as agriculture and industry.
There is access to larger markets	Free trade allows producers to sell to bigger markets beyond their country (e.g., AfCFTA in Africa).

Disadvantages of External and Free Trade

Disadvantage	Explanation
There is overdependence on foreign goods	Countries may rely too much on imports and neglect local industries. This kills local industries.
It can lead to the collapse of local industries	Due to the influx of cheaper imported goods on the market, local industries are not able to compete with foreign firms.
It brings about unfavourable terms of trade	Developing countries often export raw materials that are cheap and import expensive finished goods. This can affect the country's terms of trade.
There may be job losses in some sectors	Free trade may lead to job losses in industries that cannot compete.
It leads to the exploitation of natural resources	Excessive exports can deplete natural resources such as timber and gold.
Countries are vulnerable to global shocks	Countries may be prone to external crises (like pandemics or war). This can disrupt trade and affect economies.
There may be a loss of revenue	In free trade, the government may lose import duties and tariffs, which are a source of revenue. This is because there may be no restriction or reduction in the level of restrictions.

Example in Ghana

Advantage	Ghana gains from external trade by exporting cocoa, gold, and oil to earn foreign exchange.
Disadvantage	Cheap imports such as second-hand clothes and rice can affect local textile industries like ATL and local rice farmers.

Activity 9.3 Understanding Domestic and International Trade

The purpose of the activity is to help learners understand the differences between domestic trade and international trade, their key features, and advantages and disadvantages, by working collaboratively and building on each other's contributions.

Duration: 40–45 minutes

Materials Needed

- Notebook and pen/pencil
- Plain paper or cardboard for group notes

- Markers or pens
- Chart paper or board space (optional for visual comparison)

Instructions for Learners

Step 1: Group Division and Roles (5 minutes)

Form **5 groups**. Each group picks one of the following tasks:

Group	Task
A	Identify and describe features of domestic trade and give 2 examples
B	Explain the concept of international (external) trade
C	Explain the meaning of free trade
D	Compare domestic and international trade (same or different?)
E	List the advantages and disadvantages of both domestic and international trade

Each group should write their answers clearly for sharing. Everyone should contribute, including learners with disabilities, using writing, pointing, or signing as needed.

Step 2: Build on What Others Say (25 minutes)

- After 7–8 minutes, rotate your group to a new task.
- Read what the previous group wrote. Then:
 - Add more examples or an explanation
 - Ask a clarifying question
 - Challenge or correct an unclear point
 - Add a missing advantage or disadvantage
 - Use a real Ghanaian example if possible

Each group rotates at least twice, completing a total of three tasks.

Step 3: Return to Original Task (5 minutes)

Return to your original task sheet. As a group

- Review the contributions made by other groups
- Summarise the best ideas
- Write down one idea you did not think of before that helped your understanding

Step 4: Report Back (10 minutes)

Each group presents a summary (2 minutes) of

- Their assigned concept

- b. Key points that came from other groups
- c. One major takeaway or insight from the rotation

Use diagrams or comparison tables if helpful (e.g., Domestic vs International Trade table).

COMPARATIVE VS ABSOLUTE ADVANTAGE

Adam Smith propounded the theory of absolute advantage, which states that a country has an absolute advantage when it can produce a good using fewer resources than another country. The theory of comparative advantage was propounded by David Ricardo, which explains that a country has a comparative advantage if it can produce a good at a lower opportunity cost than another country, even if it does not have an absolute advantage.

Both theories assume that labour is the only factor of production, there is perfect factor mobility within the country, free trade exists between countries, constant returns to scale apply, and there are no transport costs. These assumptions explain why countries benefit from specialising in the production of goods they can produce most efficiently and engaging in international trade to increase overall wealth and economic efficiency.

Example (Ghana vs. Kenya)

Country	Cocoa (tonnes)	Cashew nut(tonnes)
Ghana	120	50
Kenya	60	80

Ghana has an absolute advantage in cocoa production because it produces more cocoa than Kenya.

Kenya has an absolute advantage in the production of cashew nuts because it can produce cashew nuts more efficiently than Ghana.

Comparative advantage

A country has a comparative advantage when it can produce a good at a lower opportunity cost than another country. In other words, it gives up less to create that good.

Comparative advantage is important because it is the main reason countries trade with each other. Instead of trying to produce everything, each country focuses on what it can produce most efficiently (or at the lowest cost compared to others). By doing this, all countries can benefit from trade by getting more of what they need at lower costs.

Opportunity Cost

Opportunity cost is the value of the next best alternative you give up when you make a choice.

In economics, whenever a person, business or country decides to use their resources (such as time, money or labour) to produce, they are giving up the option to create another good with those same resources. That “other good” (alternative) sacrificed is the opportunity cost.

Example (Ghana vs. Burkina Faso)

Country	Cocoa (tonnes)	Cattle
Ghana	100	80
Burkina Faso	80	70

Below is the calculation of the opportunity cost from the table above,

- For Ghana
 - Opportunity cost of 1 tonne of cocoa = $80 \text{ cattle} \div 100 \text{ cocoa} = 0.8 \text{ cattle}$
 - Opportunity cost of 1 unit of cattle = $100 \text{ cocoa} \div 80 \text{ cattle} = 1.25 \text{ cocoa}$
- Burkina Faso
 - Opportunity cost of 1 tonne of cocoa = $70 \text{ cattle} \div 80 \text{ cocoa} = 0.875 \text{ cattle}$
 - Opportunity cost of 1 unit of cattle = $80 \text{ cocoa} \div 70 \text{ cattle} \approx 1.14 \text{ cocoa}$

Ghana, therefore, has a comparative advantage in the production of cocoa because it gives up fewer cattle, while Burkina has a comparative advantage in the production of Cattle because it gives up less cocoa.

An opportunity cost of less than 1 means that the cost of choosing one option over another is relatively low—you are giving up less value compared to what you are gaining.

An opportunity cost of more than 1 means that to produce one unit of a good, you must give up more than one unit of another good. This signals a relatively high trade-off and often implies that the country or producer is less efficient at producing that good compared to alternatives.

Key Differences Between Absolute Advantage and Comparative Advantage

Feature	Absolute Advantage	Comparative Advantage
Focus	It focuses on which country produces more	It focuses on which country produces at a lower opportunity cost

Based on	It is based on Efficiency	It is based on opportunity cost or Trade-offs
Can a country have both?	Yes, a country can be efficient in both.	No (each country specialises in one good)
Importance in trade	Less important for deciding trade	More important for determining trade patterns

Why It Matters for Ghana

Ghana might not be the best at producing everything, but it can focus on what it gives up the least to produce, for example, cocoa.

By specialising in goods in which it has a comparative advantage, Ghana can trade with other countries to get the things it does not produce.

This leads to more efficient production, increased trade and economic growth.

Activity 9.4 Understanding Absolute and Comparative Advantage

Ensure all learners (including those with disabilities) can contribute:

- Let some learners calculate, others draw tables or explain.
- Allow the use of large print paper or verbal reasoning.
- Support quiet learners by assigning them roles like checking others' work, summarising, or timing.

Materials Needed

- Plain paper or chart paper
- Markers, pens
- Pre-prepared version of the production scenario (learners can also copy from the board)
- Calculators (optional but helpful)
- Table template (can be drawn by learners)

Step-by-Step Instructions for Learners

Step 1: Definitions & Group Discussion (10 minutes)

Form 4–5 mixed-ability groups. As a group:

1. Define:
 - a. What is absolute advantage?
 - b. What is comparative advantage?

2. Come up with one real-life or Ghanaian example for each:
 - a. Absolute advantage → e.g., A mechanic who can fix 10 cars a day vs one who can fix 6
 - b. Comparative advantage → e.g., A farmer who gives up fewer plantains to grow yams.

Write your definitions and examples.

Step 2: Apply to a Real-World Scenario (20 minutes)

Each group now works through this economic scenario collaboratively:

Scenario: *Ghana can produce 10 tonnes of cocoa or 5 tonnes of rice in a year. Nigeria can produce 6 tonnes of cocoa or 6 tonnes of rice in a year.*

A production table drawn from the scenario:

Country	Cocoa (tonnes)	Rice (tonnes)
Ghana	10	5
Nigeria	6	6

Answer the following questions.

1. Determine absolute advantage
 - a. Who produces more cocoa?
 - b. Who produces more rice?
2. Calculate opportunity cost for each country
 - a. For Ghana
 - i. 1 tonne of cocoa = _____ tonnes of rice
 - ii. 1 tonne of rice = _____ tonnes of cocoa
 - b. For Nigeria
 - i. 1 tonne of cocoa = _____ tonnes of rice
 - ii. 1 tonne of rice = _____ tonnes of cocoa
3. Determine comparative advantage
 - a. Who gives up less rice to produce cocoa?
 - b. Who gives up less cocoa to produce rice?
4. Decide who should specialise in which product and why.

Step 3: Presentation & Comparison (10 minutes)

Each group presents

- a. Definitions and examples
- b. Completed production table and opportunity cost calculations
- c. Specialisation decision and reasoning

After each presentation, other groups can ask questions, clarify or challenge reasoning respectfully.

CALCULATION OF EXCHANGE RATES FOR MAJOR TRADING CURRENCIES

An exchange rate is the price at which one currency can be exchanged for another, determined by the demand and supply of currencies in the foreign exchange market. For example, if \$1 = GH¢12, it means one US dollar can be exchanged for twelve Ghana cedis.

Depreciation of a currency occurs when a currency loses value due to market forces, while its **devaluation** is a deliberate reduction of the currency's value by the government. Exchange rates are influenced by several key factors, including inflation rates, where higher inflation reduces a currency's purchasing power and can lead to depreciation; interest rates, as higher rates attract foreign capital and strengthen the currency; political stability, since stable governments increase confidence in the currency while instability can cause depreciation; and trade balances, where a country with higher exports than imports experiences greater demand for its currency, supporting its value. Exchange rate fluctuations affect businesses' costs and profits, influence government revenue from imports and exports, and alter consumers' purchasing power for foreign goods and services.

Major Trading Currencies for Ghana

Ghana trades with many countries and needs to exchange currency regularly. The most commonly used foreign currencies in Ghana's trade include:

1. US Dollar (USD) – \$
2. Euro (EUR) – €
3. British Pound (GBP) – £
4. Chinese Yuan (CNY) – ¥
5. West African CFA Franc (XOF) – Fr (sometimes written as **CFA Fr** or just **F CFA**)

How to Calculate Exchange Rates

1. Direct Exchange Rate (Cedis per Foreign Currency): This shows how many Ghana cedis you need to get 1 unit of a foreign currency.

Formula: Amount in Cedis = Amount in Foreign Currency × Exchange Rate

Example:

If \$1 = GH¢10, how much is \$500 in Ghana cedis?

$$\text{GH¢} = 500 \times 10 = \text{GH¢}5,000$$

2. Indirect Exchange Rate (Foreign Currency per Cedi): This shows how many foreign currency units you get for 1 Ghana cedi.

Formula: Amount in Foreign Currency = Amount in Cedis ÷ Exchange Rate

Example:

If \$1 = GH¢10, how many US dollars will you get for GH¢5,000?

$$\text{USD} = 5,000 \div 10 = \$500$$

Buy and Sell Rates

Banks and forex bureaus use two rates when exchanging currency:

1. **Buy Rate:** The rate the bank pays you when you sell foreign currency to them.
2. **Sell Rate:** The rate the bank charges you when you buy foreign currency from them.

The difference between the buy and sell rate is called the spread, which is how banks make a profit on currency exchange.

Direct vs. Indirect Exchange Rates

These describe how exchange rates are quoted:

1. **Direct Rate:** The number of cedis per 1 unit of foreign currency (e.g., GH¢10 = \$1)
2. **Indirect Rate:** The number of foreign currency units per 1 cedi (e.g., \$0.1 = GH¢1)

In summary, buy/sell rates indicate the amount you pay to purchase or receive when selling a currency. On the other hand, direct/indirect rates refer to whether the exchange rate is quoted in terms of domestic or foreign currency.

Activity 9.5 Real-World Exchange Rates in Action

Instructions (to be done in small groups)

Option A: Real-World Observation Task (If Possible)

1. **Visit or Research a Forex Bureau or Bank Online**
 - a. Identify 3 major foreign currencies commonly traded in Ghana (e.g., USD, EURO).
 - b. Record the buying and selling exchange rates.
2. **Perform Conversions (using your data):**
 - a. Convert GH¢500 into each of the 3 currencies using the existing buying rate
 - b. Convert \$100, €100, and £100 into cedis using the selling rate
3. **Create a Visual Chart or Slide showing:**
 - a. Your exchange rates

- b. Your conversion calculations
- c. A brief explanation of the buy/sell rate difference

4. Present to the Class

- a. Use real-life examples (e.g., “If a trader wants to import from the US...”)
- b. Explain why banks offer different buy/sell rates (include the concept of the “spread”)

Option B: Scenario-Based Task (If a Bank visit or Online search is not possible)

Scenario: Imagine your group visited Fidelity Bank and saw these rates posted:

Buying Rate for \$1 = **GHS 12.00**

Selling Rate for \$1 = **GHS 12.30**

Group Tasks

1. Calculate
 - a. How much in **cedis** is needed to **buy \$150**?
 - b. How many **US dollars** will you get if you **sell GHS 2,000**?
3. From the scenario, what is the difference **between the buy and sell rates**?
4. Create a short **group presentation (max 3 minutes)**:
 - a. Show your calculations
 - b. Use a real-world example of people needing to buy or sell currency (e.g., someone travelling, importing goods, or receiving remittances)
 - c. Explain why knowing the **buying vs selling rate** matters to economists.

EXTENDED READING

- “Unlocking Opportunities in Agro-Industrialisation and Agro-Processing for Inclusive Growth in Ghana” (2024)
- Trade Ministry pledges commitment to agricultural transformation - The Business & Financial Times
- boipeegh.blogspot.com/2025/08/ghana-launches-youth-focused-feed-ghana.html

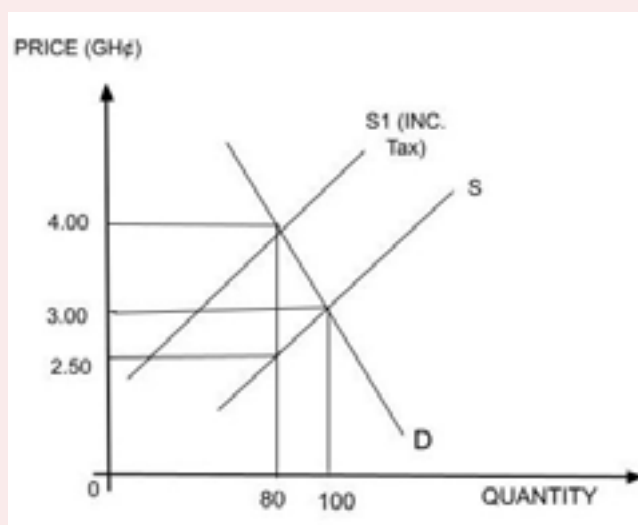


- https://citinewsroom.com/2025/05/citi-fm-channel-one-tv-to-host-agrifair-2025-dp/?utm_source=chatgpt.com



REVIEW QUESTIONS

1. In 2024, the government of Ghana introduced a tax on bottled water. After the tax was added, sellers raised their prices to cover the extra cost. Consumers paid more for the same product, while sellers also received less profit per bottle. Some of the tax burden was passed to buyers, while some remained with sellers. The government collected revenue, but demand slightly fell. The price of bottled water before and after the tax was introduced is shown in the diagram below:



- a. Explain what happens to the price of bottled water after the government introduces a tax. Use the diagram to support your answer.
 - b. Using the case and the diagram, analyse how the tax is shared between buyers and sellers. Why do both groups bear part of the tax burden instead of only one?
 - c. Evaluate how the incidence of taxation on bottled water might affect consumer behaviour and business decisions in the long term. Suggest one alternative way the government could use to raise revenue without affecting demand as much.
2. Explain two ways agriculture contributes to the economic development of Ghana.
 3. Describe how industrialisation can help reduce unemployment in developing countries.
 4. What is import substitution, and how can it support local industries?
 5. Briefly explain the relationship between agriculture and agro-based industries.
 6. How does international trade benefit the Ghanaian economy? Give two examples.

- 7.** In Ghana, the agriculture sector plays an important role in supporting industrial development. Many factories depend on raw materials from farms to produce goods. For example, a cocoa processing company in Tema uses cocoa beans from the Ashanti Region to make chocolate and other products for export. Similarly, fruit grown in the Eastern Region is used in juice factories that supply both local and foreign markets. This shows how agriculture provides essential inputs for industry and helps create jobs in both rural and urban areas.
- a.** Explain how agriculture supports industry in Ghana, using examples from the case study.
 - b.** Using the case study, analyse how a decline in agricultural production might affect industrial activity in the country.
- 8.** As Ghana works to grow its industrial sector, it faces several challenges. Many factories struggle with an irregular power supply, which affects production. In some areas, there is also a shortage of skilled workers to operate machines and manage modern equipment. High costs of imported raw materials make it difficult for local industries to compete with foreign goods. To address these problems, the government has invested in energy projects to improve the electricity supply. Technical training centres have been set up to provide skills for young people. In addition, policies that support local sourcing of materials are helping to reduce dependence on imports.
- a.** Explain two major challenges faced by industries in Ghana as mentioned in the case study.
 - b.** Using the case study, analyse how government interventions can help solve industrial challenges and promote long-term industrial growth.
- 9.** Ghana trades with many countries around the world. It exports products such as cocoa, gold, and timber and imports items such as rice, machinery, vehicles, and medicines. To encourage trade, Ghana is part of several free trade agreements that remove tariffs and reduce other trade barriers. These agreements have helped local businesses reach larger markets and access cheaper raw materials. However, some local producers find it difficult to compete with cheaper imported goods. As a result, the government continues to balance trade policies to support both exporters and local industries.
- a.** Explain two benefits Ghana gains from participating in free trade agreements, as stated in the case study.
 - b.** Using the case study, analyse how free and external trade can create both opportunities and challenges for local businesses in Ghana.
- 10.** Ghana and Côte d'Ivoire both produce cocoa and rice. However, Ghana can produce cocoa more efficiently while Côte d'Ivoire can produce rice at a lower cost. Even though Ghana can produce both goods, it chooses to focus on cocoa and import rice from Côte d'Ivoire. Côte d'Ivoire focuses on rice and buys cocoa from Ghana. This shows how each country benefits by specialising in the product it can produce at a lower opportunity cost.

- a. From the case study, why does Ghana specialise in cocoa production?
 - b. Using the case study, analyse how comparative advantage helps both Ghana and Côte d'Ivoire benefit from trade even though one country is more efficient in producing both goods.
 - c. From the case study, how is comparative advantage differentiated from absolute advantage?
- 11.** Ama runs a business in Accra that imports fabrics from China, pays for packaging from the United States, and exports garments to France. In one week, she made the following transactions:
- She paid ¥10,000 to a Chinese supplier. The exchange rate was ¥1 = GH¢0.09.
 - She paid \$200 to a packaging company in the United States. The exchange rate was \$1 = GH¢12.
 - She paid €500 to a French supplier. The exchange rate was €1 = GH¢13.5.

To manage her finances, Ama converted all the amounts into Ghana cedis. This helped her track spending more accurately. Any change in the exchange rates would affect how much she paid in cedis.

- a. From the case study, calculate the total amount spent by Ama in Ghana cedis on all her payments.
- b. If the exchange rates change were: \$1 = GH¢11.20; €1 = GH¢14.30, and ¥1 = GH¢0.06, analyse how these would affect Ama's business decisions when importing from China, the United States, and France.

ANSWERS TO REVIEW QUESTIONS

SECTION 1

1. It measures how responsive the quantity demanded of a good is to changes in its price.
2. Because luxury cars are not essential and have many substitutes, while maize is a necessity.
3. It means demand is perfectly inelastic and does not change at all when the price changes.
4. It suggests that FanMilk and Yogo are substitute goods.
5.
 - a. Kweku's situation shows a relatively elastic demand. This is because when he increased the price from GH¢40 to GH¢50, the quantity demanded dropped sharply; that is, many customers stopped buying. The high responsiveness of buyers to the price change indicates that the demand for his sandals is elastic.
 - b. Two factors from the case that may have influenced how buyers reacted to the price change.
 - Availability of Substitutes: A nearby seller was offering similar sandals at the original price of GH¢40. This means customers had an easy substitute. When Kweku raised his price, buyers quickly switched to the cheaper alternative, increasing the elasticity of demand.
 - Type of Good (Luxury vs. Necessity): Sandals may be considered non-essential or semi-luxury items, depending on the buyers' preferences and income levels. This makes demand for them more elastic, as buyers can postpone or avoid the purchase if the price increases.
 - c. I would advise Kweku to reduce his price back to GH¢40 or slightly lower to regain customers, especially if his goal is to maximise sales and revenue. Since demand for his sandals is elastic, a lower price will likely attract more buyers and increase total revenue. Additionally, he could explore differentiating his product through quality, packaging or branding to reduce the impact of nearby substitutes and make demand less elastic in the future. Short-term offers (e.g., bundle deals or discounts) can attract customers without permanently lowering prices. These tactics help boost perceived value and tap into buyers' responsiveness in an elastic market.
6.
 - a. Calculation of PED

$$PED = \frac{\% \text{ Change in Quantity Demanded}}{\% \text{ Change in Price}}$$

- Initial price (P1): GH¢10
- New price (P2): GH¢9
- Initial quantity (Q1): 400 loaves
- New quantity (Q2): 500 loaves

Step 1: Percentage change in quantity demanded

$$\text{Percentage change in quantity demanded} = \frac{500 - 400}{400} \times 100 = 25\%$$

Step 2: Percentage change in price

$$\text{Percentage change in price} = \frac{9 - 10}{10} \times 100 = -10\%$$

Step 3: Calculate PED

$$\text{PED} = \frac{25\%}{-10\%} = -2.5$$

Interpretation: The PED = 2.5, which means demand is relatively elastic. Consumers are highly sensitive to changes in price. This means that a small decrease in price resulted in a significantly larger increase in quantity demanded.

- b.** Reasons why the demand for bread in Kwabena's shop responded the way it did after the price decrease.
- **Availability of Substitutes:** Customers may have had other nearby shops selling bread at similar or slightly higher prices. When Kwabena reduced his price, many customers likely switched to his shop, making demand more elastic.
 - **Bread as a Non-Luxury with Frequent Purchases:** Bread is a common, non-luxury item bought frequently. Even a small price change can lead to large changes in buying behaviour, especially for low- to middle-income consumers who are price-conscious.
 - **Proportion of Income Spent:** A loaf of bread is relatively cheap, but because people buy it often (daily or weekly), the cumulative cost matters. This means even small savings encourage bulk or frequent buying, especially among families.
- c.** Based on the PED of 2.5, the decision to reduce the price was a good one. Demand is elastic, so lowering the price led to a proportionately larger increase in sales, which likely increased total revenue.

Recommended Strategy: Kwabena should maintain the lower price or slightly reduce it further to attract more buyers. Additionally, he can adopt a volume-based marketing strategy, such as “buy 5, get 1 free” or early morning discounts, to boost sales even more. This works well when the cost of production per unit is low, and demand is elastic.

Alternatively, he could improve brand loyalty by offering consistent quality and packaging to eventually make demand less elastic, giving him room to raise prices in the future if needed.

7.

a. Calculate Income Elasticity of Demand (YED)

Formula:

$$YED = \frac{\% \text{ change in quantity demanded}}{\% \text{ change in Income}}$$

- Initial quantity = 50kg
- New quantity = 55kg
- Change in quantity = 5kg
- Initial income = GH¢1000
- New income = initial income + 10% increase = 1000 + (10% of 1000) = GH¢1100
- $\% \text{ change in quantity} = \frac{55 - 50}{50} \times 100 = 10\%$
- Income increased from GH¢1,000 to GH¢1,100

$$YED = \frac{10\%}{10\%} = 1$$

The YED = 1, which means the demand for fresh vegetables is unitary income elastic. Since demand increased as income increased, vegetables are a normal good; people

b. The increase in demand can be explained by the following:

- **Improved Purchasing Power:**
As incomes rose, consumers could afford more or better-quality food, including fresh vegetables, leading to higher purchases.
- **Vegetables as Normal Goods:**
Fresh vegetables are likely part of a healthier or more varied diet. When incomes increase, Ghanaians may shift toward better nutrition, which includes buying more vegetables instead of just cheaper staples like gari or kenkey.
- **Change in Consumer Preferences:**
With more income, people may cook more elaborate meals or host guests more often, both of which increase demand for fresh ingredients.

This shows that Ghanaian consumers tend to increase their consumption of fresh, nutritious food when their incomes rise, reflecting a preference for quality and variety in their diets.

- c. Since the YED is 1, demand for fresh vegetables is income-sensitive and Afia should expect further increases in demand if customer incomes continue rising.

Recommendations

- **Stock Strategy:** Afia should increase her supply of vegetables gradually, focusing on variety, freshness and cleanliness. She can also introduce premium options (e.g. organic vegetables or pre-packed salad mixes) to target wealthier buyers.
- **Pricing Strategy:** Since demand is unitary elastic, Afia can consider maintaining stable prices while boosting daily sales. Slight price increases may not hurt demand much, but they must be paired with better quality or packaging.

Justification

- Afia can use the extra revenue from increased sales to improve her stall, invest in better storage or partner with farmers to ensure a consistent supply.
- Carefully monitoring income trends and customer behaviour will help her avoid overstocking while maximising profits from increased demand.

8.

- a. Calculation of the cross elasticity of demand (XED) between Omo and Sunlight Powder

Step 1: Use the XED formula

$$YED = \frac{\% \text{ change in quantity demanded of sunlight}}{\% \text{ change in price of Omo}}$$

- Initial quantity of Sunlight = 600 sachets
- New quantity = 600 + 25% = 750 sachets
- Initial price of Omo = GH¢30
- New price = GH¢30 + GH¢6 = GH¢36

$$\% \text{ change in price} = \frac{6}{30} \times 100 = 20\%$$

$$XED = \frac{25\%}{20\%} = 1.25$$

The XED is 1.25, which is positive and greater than 1, indicating that Omo and Sunlight Powder are substitute goods. A rise in Omo's price caused a relatively large increase in demand for Sunlight Powder. This means consumers are willing to switch brands when prices change.

- b. Explaining two reasons why customers in Ghana may have chosen Sunlight Powder instead of Omo after the price of Omo increased.
 - **Availability of a Close Substitute:** Sunlight Powder likely performs similar functions to Omo (cleaning clothes) and is readily available

in local shops. When Omo's price increased, consumers opted for a cheaper alternative with similar quality, making Sunlight a logical substitute.

- **Price Sensitivity of Consumers:** Many Ghanaian consumers, especially in urban areas like Cape Coast, are price-conscious due to budget constraints. A GH¢6 increase on Omo may feel significant, prompting them to switch to a more affordable brand without compromising much on cleaning performance.
- c. As the sales manager, I would capitalise on the increased interest in Sunlight Powder by launching a strategic marketing and pricing campaign, such as:

Strategies

- **Maintain or Slightly Reduce the Price**
Keep Sunlight's price stable or slightly lower to retain the new customers who switched from Omo. This reinforces the idea that Sunlight is the better value option.
- **Promote the Substitution Effect**
Use targeted advertising (radio, market posters and social media) to highlight that Sunlight gives the same cleaning power as Omo but at a lower cost. Include customer testimonials.
- **Offer Bulk Discounts or Sachet Combo Packs**
Encourage larger purchases by offering "Buy 5, get 1 free" or combo packs. This improves brand loyalty and increases weekly volume sold.

Justification: Because the cross elasticity is positive and people are quickly switching, this is a good chance to attract customers who care about price. If Sunlight shows it's a good deal and easy to find, it can turn these new buyers into loyal customers.

9.

- a. Explaining three (3) possible reasons why people may have stopped buying Fatima's fruit juice more than her mineral water.
 - **Availability of Substitutes:** There are many substitutes for fruit juice, such as chilled sachet drinks, soft drinks or homemade beverages. When Fatima increased her price, customers easily switched to cheaper alternatives.
 - **Fruit Juice is a Luxury Good:** Bottled fruit juice is often seen as a non-essential or luxury item. People buy it for taste or preference, not a necessity. So, when the price went up, consumers reduced or stopped buying it because they could do without it.
 - **Mineral Water is a Necessity:** Water is a basic need, especially in hot areas like Bolgatanga. Even when the price increased, people still had to buy it to stay hydrated. This made the demand for mineral water more inelastic than for fruit juice.

- b. In Fatima's case, customers stopped buying her fruit juice when the price went up because they could easily switch to cheaper sachet drinks. This shows that when there are many similar products, people react quickly to price changes.

On the other hand, mineral water is a necessity, especially in a hot climate where people need to stay hydrated. Even after a price increase, customers continued to buy because there are fewer perfect substitutes for clean drinking water. This makes the demand more inelastic, meaning price changes cause only small changes in quantity demanded.

Conclusion: Products with many substitutes (like fruit juice) have elastic demand, while necessities (like mineral water) have inelastic demand, which explains why customers reacted differently to Fatima's price changes.

10.

- a. Three ways that can help the government to decide whether to increase taxes on soft drinks.
- *Estimate Revenue Effects:* If demand for soft drinks is inelastic, people will continue buying them even after a price increase. This helps the government collect more tax revenue. If demand is elastic, people may stop buying and expected revenue may fall.
 - *Predict Behavioural Change:* Elasticity helps the government predict how consumers will react. If demand is elastic, increasing taxes may reduce consumption, which is useful if the goal is to discourage unhealthy drinking habits.
 - *Design Fair Tax Policies:* Understanding elasticity allows the government to avoid placing a heavy burden on consumers, especially low-income earners. If soft drinks are inelastic and people still buy them, taxes may become regressive (unfairly affecting the poor), and the government may need to adjust the tax level or exempt certain products.
- b. How the government might get different results from the tax depending on whether the demand for soft drinks is elastic or inelastic.
- *If Demand is Elastic*
Consumers will respond strongly to price increases. A tax that increases prices will likely cause many people to stop buying soft drinks or reduce consumption. In this case, the tax may achieve health goals (like reducing sugar intake) but may not raise much revenue because sales will drop.
 - *If Demand is Inelastic*
Consumers will continue buying soft drinks even if prices increase. The government will likely collect more revenue, but the tax may not reduce consumption significantly, which weakens the health impact. This also means consumers bear more of the tax burden.

SECTION 2

1. It is when consumers replace a more expensive product with a cheaper alternative when prices change.
2. The total change in demand is 3 packs (8 packs – 5 packs = 3 packs).
3. The concept is an increase in real income, which leads to higher consumption.
4. This demonstrates the substitution effect.
5. Yaw's behaviour shows how a change in price can lead someone to switch to a cheaper alternative. When the price of FanMilk yoghurt increased, it became more expensive compared to other drinks. As a result, Yaw chose to buy sobolo, which is a cheaper alternative. The substitution effect explains how consumers switch to similar but less expensive goods when the price of a preferred good increases.
6.
 - a. The fall in the price of imported rice allowed Abena's family to buy more rice for less money. Because they spent less on rice, they had extra money left over. This allowed them to buy other foods like fish and vegetables, improving the variety in their meals. The price drop gave them more purchasing power, helping them afford more goods with the same income.
 - b. The family's habits changed because of two key economic reasons:
 - Income Effect – When the price of rice fell, it felt like their income had increased because they could now buy the same amount of rice for less. This allowed them to spend the extra money on other goods like fish and vegetables.
 - Consumer Choice and Budgeting – The family made new spending choices based on better value. With rice becoming cheaper, they could now afford a more balanced diet without increasing their total spending.

This shows how a price drop can affect not only the demand for that good but also how people spend on other goods.

7.
 - a. Calculation of extra packs that Ama can buy

Ama's monthly allowance = GH¢120

She spent it equally: GH¢60 on fruit juice and GH¢60 on meat pies.

Old price of fruit juice = GH¢10

$\text{GH¢}60 \div \text{GH¢}10 = 6 \text{ packs}$

New price of fruit juice = GH¢6

$\text{GH¢}60 \div \text{GH¢}6 = 10 \text{ packs}$

Ama can now buy 4 more packs of fruit juice.

- b.** When the price of fruit juice decreases, Ama can buy more of it with the same amount of money. Two things will likely influence her decision
- Fruit juice is now cheaper than meat pies, so Ama may buy more fruit juice and fewer meat pies, substituting the cheaper option.
 - Since her money goes further now, she feels richer and may increase her overall consumption of both goods or spend more on the one she enjoys most.

So, Ama is likely to shift her spending towards more fruit juice or both, because it is relatively cheaper and because she can now afford more of the two goods.

- c.** Using the Hicksian method to break down Ama's total change in the quantity of fruit juice consumed into the substitution effect and income effect.

Initial quantity = 6 packs

New quantity = 10 packs

Total change = $10 - 6 = 4$ packs

To apply the Hicksian decomposition

Substitution Effect: This is the change in consumption due only to the change in relative prices, holding utility (satisfaction) constant. Suppose with the same utility and new prices, Ama would now buy 8 packs instead of 6.

Substitution Effect = $8 - 6 = 2$ packs

Income Effect: This is the change from feeling richer due to the lower price. She moves from 8 packs to 10 packs as a result of this effect.

Income Effect = $10 - 8 = 2$ packs

Therefore

- Substitution Effect = 2 packs
- Income Effect = 2 packs
- Total change = $2 + 2 = 4$ packs

Explanation

- The substitution effect shows that Ama prefers the cheaper fruit juice over meat pies.
- The income effect shows that Ama uses her extra "real income" to consume even more of what she likes.

8.

- a.** Utility is the satisfaction or pleasure Mawusi gets from consuming goods like fried yams and sobolo. In her case, the more she enjoys eating or drinking these items, the higher the utility she gains from them.

- b. The law of diminishing marginal utility says that as a person consumes more of a good, the additional satisfaction (marginal utility) from each additional unit decreases.

In Mawusi's case, she enjoyed fried yams in the first few days, but as she continued to eat them daily, she got less excited. This shows that her marginal utility from fried yams decreased the more she consumed them.

- c. When Mawusi's marginal utility (MU) = price, it means she is getting the maximum satisfaction per cedi spent on sobolo.

This is the point of consumer equilibrium, where she has no reason to increase or decrease her consumption, because each cedi spent on sobolo gives her exactly the satisfaction she expects. So, her consumption is optimal at this price.

- d. When the price of the sobolo fell, two things happened:
- Substitution Effect: Sobolo became cheaper compared to fried yams. Mawusi substituted more sobolo for fried yams, since sobolo gave her more value for money.
 - Income Effect: The price reduction also made Mawusi feel richer, since she could now buy more sobolo with the same GH¢300. She used the extra money saved to buy even more sobolo or other items.

Your answer might look like this, depending on the figures you use

Mathematically

Before price drop: Sobolo price = GH¢6, she bought 10 cups with GH¢60

After price drop: Sobolo price = GH¢4, she bought 15 cups with GH¢60

New cost for 15 cups = $\text{GH¢}4 \times 15 = \text{GH¢}60$

With the price now GH¢4, she could buy 15 cups with the same GH¢60.

Let us assume that;

- Substitution Effect = 3 extra cups (from switching fried yams to sobolo)
- Income Effect = 2 extra cups (from saved money due to lower sobolo price)

Total increase in sobolo consumption = 5 cups

- Substitution effect = 3 cups
- Income effect = 2 cups

Conclusion: The substitution effect led Mawusi to replace fried yams with sobolo because sobolo became relatively cheaper.

The income effect allowed her to buy even more sobolo since the lower price gave her more spending power.

SECTION 3

1. A firm may prioritise growth to establish a strong market presence, attract loyal customers and gain a competitive edge. Building brand recognition and expanding operations early on can lead to higher profits in the long term, even if short-term profits are lower.
2. A firm is more likely to expand into a region where there is strong consumer demand and good infrastructure, such as roads, electricity and internet. These factors reduce operational costs and improve access to customers and suppliers.
3.
 - a. Bulk purchasing: Buying inputs in large quantities often reduces the cost per unit.
 - b. Specialisation of labour: Assigning specific tasks to skilled workers increases productivity and efficiency.
 - c. Use of advanced machinery: Investing in better technology or equipment helps produce more output at a lower average cost.
4. As a firm grows, internal communication and coordination can become difficult. Poor staff coordination across departments can lead to delays, duplicated efforts or mistakes, which reduce overall efficiency and increase costs.
5. A permanent office block or building is a fixed factor because it cannot be easily changed or increased in the short run. It remains constant regardless of how much the firm produces.
6.
 - a. Internal and external economies of scale differ in their sources. Internal economies of scale arise from within the firm as it expands, such as investments in equipment or skilled labour. On the other hand, external economies of scale result from improvements in the external business environment, such as infrastructure or support services.

In the case of Nkate Farms Ltd:

- Internal economies of scale: The firm bought its packaging machines and trained staff internally. This reduces the average cost per unit by increasing efficiency, reducing dependence on external contractors and improving output quality.
- External economies of scale: The company benefits from improved rural roads and free training from a local agricultural college. This reduces transport and training costs, enabling faster and cheaper delivery, as well as skill development, without incurring additional expenses.

Both types of economies of scale help reduce the firm's average cost of production by either improving internal operations or leveraging external improvements.

b. As a business advisor, Nkate Farms Ltd should consider the following three factors before expanding into the Bono Region

- **Access to Infrastructure:** The success of the company in the Ashanti Region was partly due to improved rural roads, which facilitated efficient distribution. Nkate Farms should assess whether the Bono Region has comparable infrastructure. Poor roads could increase transport costs and delay deliveries, undermining the cost benefits achieved in Ashanti.
- **Availability of Skilled Labour and Training Support:** Nkate Farms benefits from free training by a local agricultural college. If the Bono Region lacks similar educational partnerships or skilled labour, the company may face higher costs in hiring or training new workers. Nkate should investigate the presence of agricultural institutions or potential collaborations.
- **Production Capacity and Internal Resources:** The company has already invested in packaging machines and internal staff training, showing readiness to scale. If the firm has the production and financial capacity to meet increased demand in a new region, expansion may be viable. However, overexpansion without sufficient capital or managerial control could lead to diseconomies of scale.

7.

a. Two problems faced by SuperBread Bakery as it grew larger and how these problems affected its cost of production.

- *Poor Communication Between Owner and Branch Managers:* As the bakery expanded, communication became slow between the owner and managers. This delayed decision-making created inefficiencies in daily operations, such as delayed orders or unclear instructions. These inefficiencies increased administrative and coordination costs, contributing to higher overall production costs.
- *Low Worker Motivation Due to Poor Supervision:* Workers across branches felt less motivated because supervision weakened as the business grew. Poor supervision can lead to lower productivity, mistakes and wastage. As efficiency drops, the bakery must use more resources to maintain output, increasing the average cost per loaf.

b. Evaluation of Challenges

SuperBread Bakery's rapid expansion led to diseconomies of scale. As it grew, the business struggled with

- Weak communication between central management and branches.
- Demotivated workers due to a lack of proper supervision and management structure.
- Increased transport costs from moving ingredients across multiple branches.

These challenges directly raised average production costs, reduced efficiency and affected overall performance.

Three Strategies to Reduce Costs and Improve Efficiency

- Decentralise decision-making with trained regional managers: Assign regional managers with authority to make quick decisions. This will streamline communication and reduce dependency on the central office, minimising delays and administrative costs.
- Implement staff training and performance incentives: Introduce structured training programs and simple incentive schemes (e.g., bonuses for efficiency or low waste). This will boost morale, reduce errors and improve productivity across branches.
- Establish local supply chains for ingredients: Instead of transporting ingredients from one location, find the source of key inputs locally for each branch. This strategy will cut transportation costs, reduce delays and ensure fresher inputs, ultimately lowering the average cost per loaf.

8.

- a. Three (3) economies of scale and three (3) diseconomies of scale factors that affected AgroFresh Ghana Ltd

Economies of Scale

- Purchase of Larger Machines: Technical economies of scale that increase efficiency and output.
- Hiring Skilled Managers: Managerial economies that improve internal coordination and decision-making.
- Bulk Buying of Raw Fruits: Purchasing economies that reduce input costs per unit.

Diseconomies of Scale

- Slow Decision-Making Across Branches – Managerial diseconomy due to increased layers of bureaucracy.
- Employee Demotivation from Poor Supervision – Labour diseconomy caused by weakened oversight.
- Delivery Delays from Traffic Congestion – External diseconomy related to logistics and infrastructure.

- b. Economies of scale refer to the cost advantages AgroFresh experienced as it grew, where average costs per unit decreased due to internal improvements. For example, buying fruits in bulk and using larger machines allowed the company to produce more at a lower cost.
- c. Diseconomies of scale, on the other hand, occurred when further expansion led to rising average costs per unit. For instance, poor communication and demotivated staff reduced operational efficiency, while traffic congestion delayed deliveries and increased transportation costs.

d. AgroFresh Ghana Ltd benefited from economies of scale early in its expansion:

- Technical economies from purchasing larger machines increased production capacity and reduced costs.
- Managerial economies were gained by hiring skilled professionals, leading to better planning and operations.
- Purchasing economies occurred through buying raw fruits in bulk directly from farmers, lowering input costs.

However, as the business grew further, diseconomies of scale set in:

- Managerial diseconomy appeared as slow decision-making emerged from having too many management layers across branches.
- Labour diseconomy was seen in poor supervision, leading to employee demotivation.
- External diseconomy occurred due to traffic congestion delaying deliveries from the main factory.

Proposed Strategies

- Decentralise operations with regional management centres: Giving regional managers decision-making authority can speed up communication, reduce delays and improve accountability, tackling the managerial diseconomy.
- Invest in workforce development and digital coordination tools: Regular training and digital tools like internal communication platforms can reconnect staff, improve supervision and ensure efficient coordination across branches. This boosts employee motivation and workflow efficiency.

9.

a. Calculation of the Marginal Revenue (MR) and Marginal Cost (MC) for each level of output (from 100 to 500 packets). (DoK Level 2)

Step 1: Calculate MR and MC

- Marginal Revenue (MR) = Change in Total Revenue ÷ Change in Output
- Marginal Cost (MC) = Change in Total Cost ÷ Change in Output

Output (Packets)	Total Revenue (GH¢)	MR (GH¢)	Total Cost (GH¢)	MC (GH¢)
100	200	–	150	–
200	400	$\frac{(400 - 200)}{(200 - 100)} = 2.00$	280	$\frac{(280 - 150)}{(200 - 100)} = 1.30$

300	570	$\frac{(570 - 400)}{(300 - 200)} = 1.70$	390	$\frac{(390 - 280)}{(300 - 200)} = 1.10$
400	700	$\frac{(700 - 570)}{(400 - 300)} = 1.30$	520	$\frac{(520 - 390)}{(400 - 300)} = 1.30$
500	750	$\frac{(750 - 700)}{(500 - 400)} = 0.50$	670	$\frac{(670 - 520)}{(500 - 400)} = 1.50$

- b.** The equilibrium output level is where Marginal Revenue equals Marginal Cost (MR = MC), and the marginal cost curve is rising.

From the table above, MR = MC at 400 packets, where both are GH¢1.30.

The equilibrium output is 400 packets. This is the most efficient level of production because producing beyond this point causes marginal cost to exceed marginal revenue, reducing profit. Producing below this point means Kofi is not taking full advantage of profit opportunities. This helps him decide how much to produce weekly to maximise his profit and avoid unnecessary costs.

c. Evaluation of Risks and Benefits

Producing above 400 packets

- Risk: Marginal cost exceeds marginal revenue (MC > MR), meaning each additional packet adds more to cost than to revenue, hence, reduced profit.
- Benefit: Only justifiable if there is potential for future demand growth or if Kofi can reduce costs through bulk production or better equipment.

d. Producing below 400 packets

- Risk: Kofi misses out on potential profit, as MR > MC at lower levels, hence, underutilisation of resources.
- Benefit: Lower output may mean lower operational risks, like fewer raw materials needed and less spoilage.

Proposed Strategy for Expansion

Kofi can expand wisely by focusing on

- Improving production efficiency (e.g., buying better ovens, using fuel-efficient methods).
- Reducing unit costs through bulk purchases of raw materials (e.g., plantain, oil).
- Exploring higher-margin markets, such as branding and selling to supermarkets or schools.
- Gradually increasing output beyond 400 packets only if he finds ways to keep MC at or below MR.

This ensures higher profits while keeping costs under control during expansion.

10.

- a.** Determination of the output level at which Brimma Agro Ltd maximises profit. Step 1: Calculate Profit = Total Revenue – Total Cost

Output (Bags)	Total Revenue (GH¢)	Total Cost (GH¢)	Profit (GH¢)
0	0	300	-300
10	1,000	800	200
20	2,000	1,300	700
30	3,000	2,100	900
40	4,000	2,800	1,200
50	5,000	3,900	1,100
60	6,000	5,300	700
70	7,000	6,800	200

Brimma Agro Ltd maximises profit at 40 bags of output, where profit is GH¢1,200.

This is the highest profit level before profit begins to decline at higher outputs.

- b.** Brimma Agro Ltd operates in a perfectly competitive market.

In this market type, many firms sell identical (homogeneous) products, and no single firm has market power to influence the price. Prices are determined by market supply and demand, and each firm is a price taker. Even if Brimma Agro becomes more efficient, it must still sell at the market price of GH¢100 per bag, because customers can easily switch to other sellers offering the same product at that price.

- c.** According to perfect competition theory, when existing firms like Brimma Agro earn supernormal profits, it attracts new firms into the market. As new firms enter:

- Market supply increases,
- Price decreases,
- Profit margins reduce,
- Firms like Brimma Agro will now sell at a lower price, leading to reduced total revenue and profit.

In the long run, this entry continues until only normal profits are made (i.e., when Total Revenue = Total Cost).

As a result, Brimma Agro's equilibrium output may decrease, and its profitability will fall to zero economic profit, although it may still cover all its costs.

- d. Even in a perfectly competitive market where a firm cannot set its own prices, understanding cost and revenue conditions is vital for decision-making.

Firms like Brimma Agro use cost data to:

- Identify the profit-maximising output level, where the difference between revenue and cost is highest.
- Avoid producing beyond this point, which leads to rising costs and falling profits.
- Monitor marginal cost and ensure it equals the market price to achieve optimal efficiency.

Revenue data also helps the firm

- Predict changes in total revenue with varying output levels.
- Plan for possible future price drops if market supply increases.
- Prepare for the long-run adjustments in the market structure.

Therefore, even as a price taker, strategic use of cost and revenue information helps Brimma Agro survive, stay competitive and adjust operations efficiently.

11.

- a. Four (4) different objectives Koba Ice Ltd has pursued since its establishment.

- Profit Maximisation: In 2018, the company aimed to increase profits by reducing costs and improving efficiency.
- Market Share Growth: In 2022, Koba Ice shifted to lowering prices and expanding distribution to compete with new entrants.
- Survival: In 2023, after a fire damaged its production unit, the company focused on staying in business, retaining staff and maintaining its customer base.
- Customer Satisfaction and Long-Term Growth: By 2025, the firm prioritised satisfying customer needs (e.g., through eco-friendly packaging) and expanding product offerings like frozen fruit juice.

- b. Koba Ice Ltd shifted from profit maximisation to market share growth in response to increased competition in the sachet water industry in 2022. With more firms entering the market, maintaining high prices and focusing solely on profit could have resulted in a loss of customers.

To stay relevant and competitive, the company chose to;

- Lower its prices to attract more buyers

- Expand distribution to reach new customers

By increasing its market share, Koba Ice could benefit from economies of scale, build brand loyalty and position itself strongly for future profitability.

c. Analysis of factors that influenced the firm to focus on survival.

Internal Factor: Fire Damage to Production Unit (2023)

This directly reduced Koba Ice's production capacity and revenue. With a damaged unit, the company had to allocate resources to repairs, retain its skilled workforce and manage day-to-day operations with limited output, forcing it to adopt a survival objective.

External Factors: Ongoing Market Competition

Even while recovering, the firm still faced pressure from other producers. To survive, it had to retain loyal customers who might otherwise shift to rivals.

Access to Funding: The need to secure funds for rebuilding and operational continuity also pushed the company to focus less on profit and more on financial stability and business continuity.

These factors made it necessary for Koba Ice to temporarily set aside profitability and focus on keeping the business alive, ensuring employee retention and maintaining customer trust until it could rebuild and stabilise.

d. Focusing on customer satisfaction and long-term growth enhances Koba Ice's competitiveness by:

- **Differentiating Its Brand:** Eco-friendly packaging appeals to environmentally conscious consumers, giving the company a competitive edge.
- **Expanding Product Lines:** By preparing to launch frozen fruit juice products, Koba Ice is diversifying to meet broader customer needs and reduce overdependence on sachet water.
- **Building Brand Loyalty:** A customer-focused approach encourages repeat purchases and creates a positive reputation, essential in a competitive market.
- **Adapting to Market Trends:** Responsiveness to customer preferences (e.g., sustainability, product variety) positions the firm for future growth and resilience against market shocks.

In sum, this approach ensures Koba Ice remains relevant, trusted and adaptable in a changing market.

e. No, a firm should not always aim for profit maximisation as its sole objective.

The following are some of the reasons:

- **Changing Market Conditions:** Like Koba Ice, firms may need to focus on survival, market share or customer retention depending on economic or operational challenges.
- **Long-Term Sustainability:** Pursuing short-term profit maximisation may lead to poor product quality, customer dissatisfaction or excessive use of resources, harming long-term prospects.
- **Social and Environmental Responsibilities:** Firms today are expected to consider sustainability, employee welfare and community impact, which may require decisions that do not immediately maximise profit.
- **Strategic Growth:** Sometimes, reinvesting in innovation, marketing or customer service can lead to stronger long-term profits, even if short-term gains are sacrificed.

Therefore, while profit remains important, firms must balance it with adaptability, responsibility and long-term planning.

12.

- a.** Price discrimination is a pricing strategy where a company charges different prices for the same product or service based on specific conditions or customer characteristics. In the case of FlexiFare Transport Ltd, price discrimination occurs because passengers pay different fares for the same Accra–Kumasi journey:

- GH¢80 for early online bookings
- GH¢100 for same-day station purchases
- GH¢60 for students and pensioners with a valid ID
- GH¢120 on weekends and public holidays due to higher demand

- b.** Two reasons why FlexiFare might prefer to use price discrimination instead of a single fixed fare.

Revenue maximisation from different customer groups

- By charging higher fares (e.g., GH¢120) during periods of high demand, the company can increase total revenue.
- At the same time, offering lower prices (e.g., GH¢60 or GH¢80) attracts price-sensitive customers, such as students and early bookers, who might not travel at all at the standard rate.

Better demand management and capacity utilisation

- Price discrimination helps spread demand more evenly. Lower fares for early bookings encourage passengers to plan ahead, reducing congestion on peak days.
- It also helps to fill empty seats that would otherwise generate no revenue, improving efficiency and profitability.

- c.** Evaluation of two advantages and two disadvantages of this pricing method for both the company and customers.

Advantages for the Company

- Higher revenue and profitability: Charging different prices based on demand and customer type allows FlexiFare to capture more consumer surplus and increase revenue.
- Efficient use of resources: Early discounts and off-peak pricing help the company to manage capacity, reduce idle seats and plan operations better.

Disadvantages for the Company

- Customer Perception of Unfairness: Some passengers may feel frustrated or cheated when they pay more for the same service, which could damage brand loyalty.
- Complexity in Implementation: Managing multiple price categories (e.g., by time, group, demand) adds administrative and system costs and increases the risk of errors or disputes.

Advantages for Customers

- Access to lower prices for some groups: Students, pensioners and early bookers benefit from affordable fares, making travel more inclusive.
- Choice and Flexibility: Passengers can choose when and how to buy based on budget and timing preferences, giving them more control over their spending.

Disadvantages for Customers

- Price uncertainty and confusion: Customers may be unsure of the best time to buy or feel pressure to book early, leading to stress and dissatisfaction.
 - Potential Inequality: Those who cannot book early (e.g., rural travellers or those without internet) may be penalised with higher prices, leading to access inequality.
- d. No, price discrimination should not be heavily regulated, but it should be monitored to ensure fairness.

Justification

Improves Efficiency and Accessibility

- Price discrimination allows firms like FlexiFare to serve a wider range of customers, including low-income groups like students and pensioners.
- It also helps companies stay profitable, ensuring continued service availability, especially in regions where transport is essential.

Encourages Market Responsiveness

- Flexible pricing matches supply with demand, making transport systems more adaptable and financially sustainable without heavy government subsidies.

Risk of Overregulation

- Banning or strictly regulating price discrimination could lead to uniform pricing, which might exclude lower-income users or lead to inefficient seat usage.

However, regulation should:

- Ensure transparency, so customers understand pricing rules.
- Prevent exploitative pricing that targets vulnerable groups or emergencies.

While regulation should prevent abuse, price discrimination can be beneficial when applied fairly. Therefore, light regulation with strong consumer protections is the best approach.

SECTION 4

1. It measures how responsive the quantity supplied of a good is to changes in its price. If supply is elastic, producers can quickly increase output when prices rise. If it is inelastic, they cannot adjust production easily.
2. It helps producers plan their output and resource use efficiently. If they know how responsive their supply is to price changes, they can adjust production levels to take advantage of higher prices or avoid overproduction during price drops.
3. Because farming involves long production times, crops need time to grow and mature. Even if prices rise suddenly, the farmer cannot instantly produce more, making supply inelastic in the short term.

4.

- a. The supply of tomatoes is more elastic in the rainy season because the farm can grow more tomatoes easily when prices go up. In the rainy season, there is free water from rain, and it is easier to get and cheaper to pay. This helps the farm increase supply quickly. But in the dry season, the farm needs to use irrigation and wait longer to grow tomatoes. It also needs more money to pay workers and buy water. So, even if prices rise, the farm cannot increase supply quickly. That is why supply is more elastic in the rainy season than in the dry season.

- b. Increasing the price of tomatoes can help increase local production but it will work better in the rainy season. In the rainy season, Adom Tomato Farm can grow more tomatoes quickly because there is enough rain and labour is cheap. So, the farm can take advantage of the higher prices.

In the dry season, the farm may not benefit much from the price increase because it is harder to grow more tomatoes. There is less water, labour costs are higher, and crops take longer to grow. So even if prices rise, the farm cannot increase supply easily.

To fix this, the farm can build a water storage system or use drip irrigation. This will help the farm grow more tomatoes even in the dry season and

respond better when prices go up. It will also help the farm make more profit all year round.

5.

- a. Using the midpoint formula:

$$PES = \frac{[(Q_2 - Q_1)/(Q_1 + Q_2)/2]}{[(P_2 - P_1)/(P_1 + P_2)]/2}$$

Original quantity (Q1) = 200 pineapples

New quantity (Q2) = Q1 + 60 = 200 + 60 = 260 pineapples

Original Price (P1) = GH¢ 5

New Price (P2) = P1 + 20% = 5 + (20/100 × 5) = 5 + 1 = GH¢ 6

$$PES = \frac{[(260 - 200)/(200 + 260)/2]}{[(6 - 5)/(5 + 6)]/2}$$

$$PES = \frac{[60/460]}{[1/11]} = 1.43$$

Interpretation: Since PES is **greater than 1**, supply is **elastic**. This means Nana Yaa was able to respond well to the price increase by supplying more pineapples.

- b. Nana Yaa's decision to increase supply when prices rose shows that she understands how to respond to market changes. Her supply was elastic, so she could grow and sell more pineapples, leading to higher profits. This reflects the concept of price elasticity of supply, which explains how producers respond to rising prices by boosting their production.

This understanding helps her plan better in future seasons. If she sees prices going up, she can prepare to plant more or hire more workers. This helps her earn more when the market is good and avoid losses when prices are low.

- c. Understanding how supply responds to price changes helps Nana Yaa predict how much she should produce when market prices change. This knowledge allows her to avoid producing too much during low-price periods and take advantage of higher prices when they occur, which helps maintain or increase her profits.

Two low-cost strategies she can adopt

- **Interval Planting:** By planting pineapples at different times, she ensures a continuous harvest over time. This flexibility allows her to increase supply when prices rise without incurring new production costs all at once.
- **Improved Storage or Preservation Methods:** Using affordable storage techniques (like shade storage or solar drying for by-products) helps her hold some produce temporarily until prices are more favourable, allowing better timing in market supply.

6.

- a. Two factors that made it difficult for Afia to increase her vegetable supply when prices first went up.
 - Her land was small.
 - She had a few workers.
- b. Two factors that affect how easily a farmer can increase supply when prices go up.
 - One factor is the size of the land. A farmer with more land can grow more crops when prices increase.
 - Another factor is the number of workers. If a farmer has enough workers, it is easier to plant and harvest quickly to meet market demand.
- c. Afia's larger land allowed her to grow more vegetables at once. The new equipment, such as the irrigation system, helped her water crops faster and more regularly. These improvements made it easier for her to increase supply when prices increased.
- d. Afia's changes gave her more control over how much she could produce. With more land, workers and irrigation, she can now grow more crops faster. This helps her take advantage of high prices. In the future, she can plan and produce more when prices are expected to rise, which will help her make more profit and avoid wasting resources.
- e. Understanding price elasticity of supply helps farmers like Afia to know how quickly they can respond to market changes. If prices go up and supply is elastic, the farmer can increase output and earn more. If supply is inelastic, the farmer might miss the opportunity. This knowledge helps with planning the right amount to produce at the right time to avoid losses and stay competitive.

SECTION 5

1. The main purpose is to make products available to consumers at the right place and time. Distribution channels help to move goods from producers to end users efficiently.
2. To reduce delivery time and transport costs. A shorter channel means fewer intermediaries, which can make the process quicker, more cost-effective, and allow for better control over sales.
3. An agent helps find customers and secure new buyers on behalf of the producer. They act as a link between producers and markets without taking ownership of the goods.
4. It involves choosing specific outlets or locations to sell a product, often to maintain a certain
5. Poor road networks often cause transport delays, making it harder and more expensive to distribute goods to rural locations.

6. Partnering with a dependable transport firm can improve delivery reliability and help manage fuel and logistics costs more efficiently.

7.

- a. Two ways Amina changed how she sells and delivers her products as her business grew.

- First, Amina started selling her soap to retail shops in Tamale and Kumasi. This allowed her products to reach people who shop in stores, not just at markets.
- Second, she began taking online orders through social media and offering home delivery. This made it easier for people to buy her soap from different places.

These changes helped her reach more customers by making her products available in shops and online, not only in local markets.

- b. Using different ways to sell, like retail shops, online sales and a distributor, has helped Amina sell more soap and reach customers in other towns. She no longer depends on just one place or method. This makes her business stronger and more flexible.

If Amina wants to enter new markets, having many ways to deliver her soap will make it easier. Shops, online orders and wholesale delivery will help her reach people with different buying habits. These methods also make her brand more visible and trusted in more areas.

8.

- a. Two agencies of distribution that Kwesi uses to sell his honey.

- Kwesi works with wholesalers who buy large amounts of honey and supply shops in different towns. This helps him reach more customers without having to deliver to each shop himself.
- He also uses an agent in Accra who finds new customers and handles big orders. This saves Kwesi time and helps him sell more honey in places he cannot easily visit.

- b. Analysing why Kwesi chose a selective distribution strategy for his honey business.

Kwesi chose a selective distribution strategy so he could work only with shops and partners that match his brand. This helps him to make sure his honey is sold in good places and keeps the quality high.

By choosing where and how his honey is sold, he avoids problems with poor handling or bad customer service. These build trust in his brand. It also helps him focus on the right customers and grow his business in a smart and controlled way.

9.

- a. Two problems Badu faced in distributing his rice.

- One problem Badu faced was that his delivery trucks often broke down because of bad roads. To fix this, he started working with a transport company that has more reliable vehicles.
 - Another problem was damaged packages. Retailers complained about this, so Badu began using stronger packaging materials to keep the rice safe during transport.
- b.** Badu's solutions helped him deliver rice more safely and on time. The stronger packaging stopped damage to the rice, and the better transport reduced delays. These changes made his service more reliable.
- Retailers are likely to trust Badu more now because they receive their rice in good condition and on schedule. This can lead to better business relationships and more repeat orders.
- c.** If fuel prices increase and road conditions become poor, Badu's delivery expenses will rise, and deliveries may become slower. This could reduce his profit and make retailers dissatisfied. Over time, he may lose customers if the delays persist. To handle this, Badu could partner with more nearby retailers to reduce the need for long-distance deliveries. He could also collaborate with other businesses in the area to lower costs and ensure a consistent supply.

SECTION 6

1. To protect producers by ensuring that they receive a minimum income, especially in sectors like agriculture, where prices may otherwise fall too low.
2. A surplus of maize occurs when producers supply more but consumers buy less at the higher price.
3. A legally set maximum price for a good or service, usually imposed to make essential items more affordable for consumers. It is effective only when set below the market equilibrium price.
4. Reduced rental income, difficulty covering maintenance costs and less incentive to invest in property improvements. It may also discourage new housing development or lead to informal rental arrangements.
5. Both interfere with the natural market equilibrium, leading to shortages or surpluses.
6. Surplus cocoa (due to higher producer prices encouraging more supply) and fuel shortages (due to lower prices increasing demand but discouraging supply).
7.
 - a. The Ghanaian government introduced a minimum price of GH¢150 per 50 kg bag of maize in 2024 to support local farmers who were struggling with falling prices. Before the policy, maize prices had dropped as low as GH¢100, making it difficult for farmers to cover their production costs.

The minimum price aimed to ensure that farmers earned enough to stay in business and continue producing food.

- b.** The minimum price helped maize farmers by guaranteeing them a higher and more stable income, which encouraged continued production. However, it also discouraged some traders and processors from buying maize, as the higher price made it less profitable for them. This led to an excess supply (surplus) because not all the maize could be sold at the fixed price. Farmers with unsold maize faced storage problems and financial pressure, while buyers either reduced their purchases or sought cheaper alternatives.
- c.** The minimum price policy was partly effective because it protected farmers from extremely low prices and provided them with financial stability. However, it also created unintended consequences such as excess supply and unsold stock, which led to waste and required government intervention. This shows that while the policy offered short-term relief, it did not fully address the problem of market imbalance.

An alternative strategy the government could use is to subsidise production inputs, such as fertilisers and seeds, rather than fixing the price of maize. This would lower farmers' production costs, helping them to stay profitable even if market prices are low, without distorting the market or causing a surplus.

8.

- a.** The Ghanaian government introduced a maximum rent price in Accra to make housing more affordable for low-income families. Rent prices had become too high for many people, with some landlords charging up to GH¢2,500 for a single-room apartment. By setting a limit of GH¢1,800, the government aimed to reduce the financial pressure on tenants and make it easier for more people to find decent accommodation.
- b.** The maximum rent price helped tenants by lowering the cost of housing, allowing more people to afford a place to live. However, some tenants still struggled because landlords began demanding unofficial payments or withdrawing their rooms from the market. For landlords, the fixed rent reduced their potential income, leading some to remove their properties from the rental market. Others delayed or cancelled new construction projects because they believed the policy would reduce profits. These actions made it harder for people to find housing and discouraged investment in new rental properties.
- c.** The maximum rent policy made housing more affordable for some tenants, but it also led to unintended problems. Landlords reacted by reducing the number of rental units available or finding ways around the rules. Developers were discouraged from building new homes, which reduced the overall supply of housing. As a result, although the policy aimed to help low-income families, it may have worsened the housing shortage in the long term.

A better alternative could be for the government to increase investment in affordable public housing. By building more low-cost homes, the government could increase supply directly without relying on price controls. This would help more people to access housing without discouraging private landlords and developers.

9.

- a. The government introduced a minimum price for maize to help local farmers earn a stable income and encourage them to keep producing despite a decrease in market prices. This was meant to protect their livelihoods. At the same time, it introduced a maximum price for petrol to make fuel more affordable for households, commuters and small businesses. This was done to reduce the financial burden on consumers and support economic activity.
- b. The minimum price on maize helped farmers earn more, but it also led to an excess supply because the high price discouraged some buyers. Farmers had difficulty in selling all their produce, resulting in storage problems and financial pressure. On the other hand, the maximum price on petrol made fuel more affordable for consumers, but it caused losses for fuel suppliers, who could not charge enough to cover their costs. This led to occasional fuel shortages and discouraged new investment in the sector. Overall, both policies disrupted the natural balance of the market, creating surpluses in maize and shortages in petrol, which made it harder for producers and consumers to operate efficiently.

10.

- a. Diagram Showing Minimum and Maximum Prices of Maize



The diagram above shows the effects of government-imposed price controls on maize. The minimum price (price floor) is set above the equilibrium price to support producers, while the maximum price (price ceiling) is set below the equilibrium price to protect consumers.

- b. In this case, the government initially set a minimum price above the equilibrium level to support maize farmers. This encouraged producers to

increase supply, but since consumers were not willing to buy at the higher price, it led to unsold maize, a surplus. This illustrates how a price floor can distort the market, resulting in overproduction and waste.

Later, the government imposed a maximum price below the equilibrium to help low-income consumers. However, sellers were not willing to supply maize at that lower price, causing shortages in urban shops. This shows that a price ceiling can reduce incentives for sellers, resulting in underproduction and unmet consumer demand.

Thus, both price controls led to inefficiency and instability, despite being introduced to support fairness and affordability.

- c. If both price controls are maintained long-term, the grain market may suffer chronic surpluses and shortages. Surpluses from price floors may lead to waste, storage costs, or pressure on government budgets if they buy excess stock. On the other hand, price ceilings can discourage production, reduce market participation, and create informal markets or hoarding due to scarcity.

Over time, these effects may undermine market efficiency, reduce investment in agriculture, and lead to food insecurity.

A more sustainable intervention would be for the government to introduce a targeted subsidy system:

- Subsidise producers directly to ensure a minimum income without distorting prices.
- Provide food vouchers or cash transfers to low-income consumers to make food affordable without reducing the market price.

This approach supports both sides of the market while maintaining price signals and encouraging efficient production and consumption.

SECTION 7

1. Their purchasing power will fall, as goods and services become more expensive but their income does not increase.
2. It reduces national income because fewer people are earning wages and it lowers tax revenue since fewer incomes are taxed.
3. Government spending on roads: This includes expenditure on infrastructure projects, which injects money into the economy, creating jobs and boosting demand for goods and services.
4. Aggregate expenditure will increase because higher investment and consumption raise total spending in the economy.
5. Household consumption is likely to decrease as borrowing becomes more expensive and people choose to save more instead of spending.

6.

- a. The rise in interest rates made borrowing more expensive for businesses in Ghana. As a result, many firms delayed or reduced their investment plans because the cost of taking loans to expand operations or purchase equipment became too high. This slowdown in investment led to fewer business expansions and reduced job creation. Consequently, employment levels declined as companies were unable or unwilling to hire more workers due to the higher cost of financing, contributing to a rise in unemployment.
- b. Inflation, which refers to a general increase in prices, triggered several changes in other parts of the Ghanaian economy in 2023.
 - The rise in inflation, especially from fuel and food prices, prompted the Bank of Ghana to increase interest rates to control the rising cost of living. This shows how inflation influenced monetary policy.
 - The higher interest rates discouraged business investment by making loans more expensive. This, in turn, slowed down job creation and led to higher unemployment.

These examples show how one macroeconomic variable (inflation) can cause a chain reaction, affecting interest rates, investment, employment, household income and overall economic growth.

- c. Policymakers in Ghana face a major challenge in balancing inflation control with employment growth. As seen in the case study, the Bank of Ghana increased interest rates to combat inflation. While this strategy can help reduce inflation by lowering spending and borrowing, it also makes it more expensive for businesses to access credit. This discourages investment, slows job creation and increases unemployment.

The challenge lies in the trade-off between stabilising prices and maintaining jobs. If interest rates are raised too much, inflation may fall, but at the cost of higher unemployment and slower economic growth. If rates are kept too low to encourage job creation, inflation might worsen. Policymakers must find a balance between these goals, often referred to as the “policy dilemma.”

7.

- Government spending created jobs through road and school projects. As people earned more, they spent more at Kofi’s bakery, increasing his sales. He was able to hire more workers and expand. But when the government reduced spending, incomes dropped, customers spent less, and Kofi’s sales fell. This forced him to cut staff. So, government spending directly affected both his business and how much customers could afford to buy.
- Government spending is a major part of aggregate expenditure because it boosts income and demand. In Kofi’s case, government projects increased employment and household income. This led to more sales, job creation and business growth. But when spending fell, income and demand

dropped, affecting his business negatively. Over time, steady government spending can increase economic activity, support businesses, create jobs and help the economy grow. Inconsistent spending can cause the opposite effect.

8.

- a. Calculation of the value of the multiplier using the MPC of 0.71.

$$\text{Multiplier} = \frac{1}{(1-\text{MPC})}$$

$$\text{Multiplier} = \frac{1}{(1-0.71)}$$

$$\text{Multiplier} = \frac{1}{(0.29)}$$

$$\text{Multiplier} \approx 3.45$$

The value of the multiplier is approximately 3.45.

- b. The government spent GH¢1 million, which created jobs and income for local workers. These workers spent part of their income in local shops, increasing sales. In response, shops hired more staff. This created more income and jobs in the community, multiplying the effect of the original spending.
- c. In the long term, increased government spending can boost income, reduce unemployment and support business growth. It can lead to better infrastructure and attract more investment. However, if not well managed, it could also increase public debt or cause inflation.

SECTION 8

1. Recurrent expenditure refers to the government's regular, ongoing expenses such as salaries, utility bills, and maintenance.
Capital expenditure refers to spending on long-term projects, such as roads, schools, and hospitals, that enhance national infrastructure.
2. The government earns non-tax revenue through fees for services such as issuing passports or business licences, and through dividends from state-owned enterprises like GNPC.
3. A government may run a deficit budget to stimulate the economy by increasing spending on infrastructure, social programmes, or job creation, even if revenue is low, to support growth and reduce unemployment.
4. National debt allows the government to borrow funds to cover spending when revenue is insufficient. It is used to finance development projects, manage emergencies, or support the economy during tough periods.
5. An example of a direct tax is income tax, which individuals pay directly on their earnings.

An example of an indirect tax is VAT, which is built into the price of goods and services and paid by consumers.

The main difference between the two is that direct taxes are levied on incomes and paid directly to the government by individuals or businesses, while indirect taxes are applied to goods and services and are initially collected by sellers from consumers before being transferred to the government.

6. When a tax is imposed on a product, producers may raise prices to cover some of the tax. Consumers then pay part of the tax through higher prices, while producers may bear the rest by accepting lower profit margins. The actual burden depends on how sensitive buyers and sellers are to price changes.

7.

- a. Calculate the total government expenditure.

Add all expenditure items:

Total Expenditure = Salaries and Wages + Infrastructure Development + Interest on Public Debt + Education Subsidies + Health Sector Support + Administrative Services

Total Expenditure = 45,000 + 30,000 + 18,000 + 12,000 + 10,000 + 5,000
= GH¢120,000 million

- b. Calculate the total government revenue.

Add all revenue items:

Total Revenue = Income Tax + Corporate Tax + Import Duties + VAT + Petroleum Revenue + Non-Tax Revenue

Total Revenue = 30,000 + 25,000 + 10,000 + 15,000 + 8,000 + 7,000
= GH¢95,000 million

- c. Determining government budget surplus or deficit

Budget Deficit = Total Expenditure - Total Revenue

= GH¢120,000 million - GH¢95,000 million

= GH¢25,000 million

Explanation

A budget deficit means the government is spending more than it earns. This can lead to borrowing, which increases national debt. While borrowing can fund important development projects, it may result in high interest payments and limit future spending on essential services, such as education, health, and infrastructure.

8.

- a. Explanation of three reasons why the government spent money on infrastructure and public services.

- To improve national development: Roads and transport systems help connect regions, boost trade, and make it easier for people to access services.
 - To create jobs: Construction and maintenance of infrastructure employs engineers, drivers, and labourers.
 - To enhance service delivery: Public offices, schools, and hospitals need regular funding to operate effectively and serve citizens better.
- b.** Spending on teachers improves the quality of education, which helps produce a skilled and knowledgeable workforce for future development. Investing in health workers ensures better healthcare delivery, reduces illness, and increases productivity. Together, these sectors support long-term economic growth and improve citizens' quality of life.

9.

- a.** Explanation of three sources of revenue the government of Ghana collected in 2025.
- **Income Tax:** This is a tax imposed on the earnings of individuals, such as salaries, wages or income from other sources and is paid to the government based on how much a person earns.
 - **Corporate Tax:** This is a tax paid by businesses on the profits they make after covering their operating expenses, and it is an important source of government revenue.
 - **Value Added Tax (VAT):** This is a tax added to the price of goods and services at the point of sale, which is paid by the consumer and collected by businesses on behalf of the government.
- b.** Income tax contributes to revenue by collecting a portion of individuals' earnings. This provides steady funding for salaries, education and healthcare. Corporate tax generates revenue from businesses' profits, helping the government finance infrastructure, industry and public services.
- c.** Three reasons why government revenue is important for national development.
- **Funding Public Services:** Government revenue is used to provide essential public services such as education, healthcare, water supply and security, which improve the quality of life and promote human development across the country.
 - **Building Infrastructure:** Revenue enables the government to invest in national infrastructure projects like roads, bridges, schools, and hospitals, which are necessary for economic growth and long-term development.
 - **Reducing Poverty and Inequality:** With sufficient revenue, the government can support social protection programmes, create jobs, and

offer subsidies to the poor, helping to reduce inequality and improve social welfare.

10.

- a.** Borrowing allows the government to invest in vital projects such as roads, schools, and hospitals when available revenue is not enough. However, it also increases debt levels. Borrowing locally can reduce the amount of money available for private businesses to borrow and invest, while international loans may come with strict repayment conditions and currency risks. If not managed well, borrowing can lead to long-term financial pressure on the economy.
- b.** As debt rises, the government must spend more on interest payments. This reduces the funds available for essential services such as health, education, and infrastructure. High debt may also lower investor confidence and affect credit ratings. Over time, it could lead to strict measures, making it harder to meet the needs of citizens and achieve development goals.

11.

- a.** After the government introduced a tax on bottled water in 2024, the price of bottled water increased. The diagram shows a shift in the supply curve to the left (from S to S_1), indicating that producers are now supplying less (from 100 to 80) at each price level due to the additional cost imposed by the tax.

As a result, the new equilibrium price rises from the original price (GH¢3.00) to a higher price (GH¢4.00). This price increase reflects the sellers' passing some of the tax burden onto consumers. However, the price does not rise by the full amount of the tax, which shows that sellers also bear part of the tax ($\text{GH¢}3.00 - \text{GH¢}2.50 = \text{GH¢}0.50$). The higher price leads to a slight fall in quantity demanded, as indicated by a movement along the demand curve.

- b.** The tax burden is shared between buyers and sellers because of the relative elasticities of demand and supply. From the case and diagram, the price buyers pay increased (from GH¢3.00 to GH¢4.00), but not by the full amount of the tax, which means consumers pay part of the tax while sellers absorb the rest through reduced revenue per unit sold.

Buyers bear some of the tax burden ($\text{GH¢}4.00 - \text{GH¢}3.00 = \text{GH¢}1.00$) because they now pay more for the same product. Sellers also bear a portion ($\text{GH¢}3.00 - \text{GH¢}2.50 = \text{GH¢}0.50$) because, even with the price increase, they receive less profit per bottle. The reason both parties share the burden is due to the price elasticity of demand and supply:

- If demand is relatively inelastic (consumers still buy despite price increases), buyers bear more of the burden.
- If supply is relatively inelastic (sellers cannot easily reduce output), sellers bear more.

In this case, since both price and quantity changed moderately, both demand and supply are likely to be somewhat elastic, causing the burden to be shared.

- c. In the long term, the tax may lead to reduced bottled water consumption as consumers seek cheaper alternatives, such as tap or sachet water. This shift in behaviour could reduce overall demand further. Some consumers may also reduce their purchase frequency or quantity due to the higher cost.

For businesses, reduced demand may lead to lower revenue and possibly reduced production or job cuts. Companies might also explore cost-cutting measures or shift to other products not affected by the tax. This uncertainty could discourage investment in the bottled water industry.

An alternative way the government could raise revenue is by taxing luxury or non-essential goods with more inelastic demand, such as alcohol or tobacco, where demand is less sensitive to price increases. Another option could be broadening the tax base through improved tax collection or digital services taxes, which can raise revenue without significantly affecting basic consumer needs.

SECTION 9

1. Agriculture employs a large portion of the population, reducing poverty and improving livelihoods. It also supplies raw materials to local industries, such as cocoa for chocolate production.
2. Industrialisation creates jobs in manufacturing, construction and processing sectors, which absorb surplus labour from agriculture and reduce rural-urban migration.
3. Import substitution is a strategy in which a country produces goods locally to replace imported ones. It supports local industries by increasing demand for locally made products and reducing dependence on foreign goods.
4. Agro-based industries rely on agricultural produce as raw materials. For example, cassava is used in the food processing industry to make flour or starch, linking farming with industrial activity.
5. International trade earns foreign exchange through exports such as gold and cocoa. It also provides access to goods not produced locally, like machinery or electronics.
6.
 - a. Agriculture supports industry in Ghana by providing the raw materials that factories need to produce goods. For example, cocoa beans grown in the Ashanti Region are used by a cocoa processing company in Tema to produce chocolate and other cocoa-based products for export. Likewise, fruits from the Eastern Region are used by juice factories that serve both local and foreign markets. This connection shows that without the output from farms; many industries would not have the inputs they need to

operate. Agriculture also supports employment by creating jobs on farms and in factories, helping both rural and urban communities.

- b.** A decline in agricultural production would reduce the supply of raw materials to factories. For instance, if cocoa production in the Ashanti Region drops, the cocoa processing company in Tema would have less input to work with, leading to lower production levels. Similarly, juice factories depending on fruits from the Eastern Region would struggle to meet demand. This could result in job losses, reduced exports, and a slowdown in industrial growth. In the long run, it could affect Ghana's economy by reducing income for both farmers and factory workers, limiting economic development in both rural and urban areas.

7.

a. Challenges faced by industries in Ghana

- **Irregular Power Supply:** Many factories in Ghana experience unstable electricity. This causes machines to stop working unexpectedly, leading to delays in production, spoilage of goods, and extra costs for fuel and repairs.
- **Shortage of Skilled Workers:** Some areas do not have enough trained people to operate or maintain modern machines. This limits how well factories can use new technology, which affects productivity and quality.
- **High Cost of Imported Raw Materials:** Industries often rely on materials from outside the country. Importing these materials is expensive due to shipping costs, taxes, and currency exchange. This makes it hard for local products to compete with cheaper foreign goods.

- b.** The government is improving electricity through energy projects, which helps factories work without frequent interruptions. Technical training centres are giving young people the skills needed by industries. Policies that encourage local sourcing reduce the cost of raw materials. These actions help industries grow stronger and become more competitive over time.

8.

a. Two benefits Ghana gains from participating in free trade agreements, as stated in the case study.

- **Access to Larger Markets:** Free trade agreements allow Ghanaian businesses to sell their products, such as cocoa, gold, and timber, in more countries without paying high tariffs. This helps local exporters expand their customer base, increase sales, and earn more foreign exchange.
- **Cheaper Raw Materials:** By reducing or removing tariffs on imported goods, free trade agreements make it cheaper for Ghanaian businesses to bring in raw materials and machinery. This reduces production costs, which helps industries to grow and become more competitive.

- b.** Analysis of how free and external trade can create both opportunities and challenges for local businesses in Ghana.

Opportunities: Free and external trade help Ghanaian businesses reach international markets, boosting exports and income. For example, cocoa and timber producers can sell to more countries, which encourages production and job creation. Businesses can also import machinery and materials at lower costs, improving efficiency and reducing expenses.

Challenges: At the same time, local businesses face strong competition from cheaper imported goods. Some local producers may struggle to match the low prices of foreign products, which can reduce their sales and profits. This is especially difficult for small industries that lack modern equipment or government support.

9.

- a.** Ghana specialises in cocoa production because it can produce cocoa more efficiently and at a lower opportunity cost than rice. Although Ghana is capable of producing both cocoa and rice, it gives up less by focusing on cocoa. By doing so, it can produce more cocoa, trade for rice, and benefit more than trying to produce both goods itself.
- b.** Comparative advantage means that each country focuses on producing the good it can make at the lowest opportunity cost. In the case study, Ghana is more efficient overall but still benefits from specialising in cocoa because that is where its advantage is strongest. Côte d'Ivoire, although less efficient overall, has a comparative advantage in rice because it gives up less by producing rice instead of cocoa.

By specialising this way, both countries produce what they are best at and then trade. Ghana gets rice at a lower cost by importing it, and Côte d'Ivoire gets cocoa without producing it. This increases efficiency, trade, and economic gains for both countries, even if one is better at producing both goods.

- c.** Absolute advantage is when a country can produce more of a good using the same or fewer resources. In the case study, Ghana has an absolute advantage in producing both cocoa and rice.

Comparative advantage, however, is about producing a good at a lower opportunity cost. Although Ghana is better at producing both goods, it still trades with Côte d'Ivoire because Côte d'Ivoire has a comparative advantage in rice. This means Côte d'Ivoire gives up less when it chooses to produce rice instead of cocoa.

So, while absolute advantage focuses on overall efficiency, comparative advantage explains why countries trade and specialise, even if one is more efficient in producing everything.

10.

- a. To find the total, we multiply each foreign currency amount by its respective exchange rate

- From China

$$¥10,000 \times \text{GH¢}0.09 = \text{GH¢}900$$

- From the United States

$$\$200 \times \text{GH¢}12 = \text{GH¢}2,400$$

- From France

$$€500 \times \text{GH¢}13.5 = \text{GH¢}6,750$$

Now, add all the cedi amounts:

$$\begin{aligned} \text{Total amount spent by Ama} &= 900 + 2,400 + 6,750 \\ &= \text{GH¢}10,050 \end{aligned}$$

Ama spent a total of GH¢10,050 on all her payments.

- b. Analysis of how changes in exchange rates affect Ama's business decisions when importing from China, the United States, and France.

- China (¥1 = GH¢0.06): The cedi has strengthened against the yen (from GH¢0.09 to GH¢0.06), meaning it now takes fewer cedis to buy the same amount of yen. This makes importing fabrics from China cheaper, so Ama might increase her orders or import more frequently from China.
- United States (\$1 = GH¢11.20): The cedi has strengthened slightly against the dollar (from GH¢12 to GH¢11.20), making packaging from the U.S. less expensive. Ama may consider ordering more packaging or keeping her packaging supplier.
- France (€1 = GH¢14.30): The cedi has weakened against the euro (from GH¢13.5 to GH¢14.30), meaning it now costs more cedis to pay in euros. This will make Ama's purchases from France more expensive, and she may reconsider the volume she exports or look for a cheaper European partner.

Conclusion: These exchange rate changes would lower Ama's import costs from China and the U.S. but increase costs from France. As a result, she may shift more of her business to suppliers with more favourable exchange rates or adjust her pricing to cover the higher costs from Europe.

REFERENCES

1. Aryeetey, E., & Kanbur, R. (Eds.). (2017). *The economy of Ghana, sixty years after independence*. Oxford University Press.
2. Aryeetey, E., & Kanbur, S. M. R. (Eds.). (2017). *The economy of Ghana: Sixty years after independence*. Oxford University Press.
3. Asamoah, S. (2017). *Ghanaian economy: Principles and applications*. Excellent Publishing Services.
4. Bank of Ghana. (2023). *Monetary policy report: Inflation and exchange rate developments*.
5. Begg, D., Fischer, S., & Dornbusch, R. (2014). *Economics* (11th ed.). McGraw-Hill Education.
6. Blanchard, O., & Johnson, D. R. (2017). *Macroeconomics* (7th ed.). Pearson.
7. Curriculum Research and Development Division (CRDD), Ministry of Education.
8. Diao, X., Hazell, P. B. R., Kolavalli, S. L., & Resnick, D. (Eds.). (2019). *Ghana's economic and agricultural transformation: Past performance and future prospects*. Oxford University Press.
9. Ghana Education Service. (2020). *Common Core Programme Curriculum – Economics (SHS)*.
10. Ghana Education Service. (n.d.). *Economics curriculum for senior high schools*. <https://curriculumresources.edu.gh/wp-content/uploads/2024/11/Economics-Curriculum-Curriculum.pdf>
11. <https://www.52coding.com.cn/2019/02/22/Elasticity%20and%20Its%20Application/>. *Microeconomics - Elasticity and Its Application* (2019)
12. Institute of Statistical, Social and Economic Research (ISSER). (2023). *The state of the Ghanaian economy in 2022*. ISSER, University of Ghana.
13. Institute of Statistical, Social and Economic Research (ISSER). (2023). *The state of the Ghanaian economy in 2022*. ISSER, University of Ghana.
14. Kotler, P., & Armstrong, G. (2018). *Principles of marketing* (17th ed.). Harlow, England: Pearson Education.
15. Krugman, P. R., Obstfeld, M., & Melitz, M. J. (2018). *International economics: Theory and policy* (11th ed.). Pearson Education.
16. Limited.
17. Lipsey, R. G., & Chrystal, K. A. (2015). *Principles of economics* (12th ed.). Oxford, UK: Oxford University Press.
18. Mankiw, N. G. (2014). *Principles of economics* (7th ed.). Stamford, CT: Cengage Learning.
19. Osei, R. D., & Domfe, G. (2014). *Public finance in Ghana: Policy, practice and outcomes*. Institute of Statistical, Social and Economic Research (ISSER), University of Ghana.
20. Osei-Assibey, E., & Ackah, C. (2018). *Ghana's industrial policy and job creation in the agro-processing sector*. University of Ghana Business School & Friedrich-Ebert-Stiftung.
21. Parkin, M. (2016). *Economics* (11th ed.). Pearson Education.
22. Sackey, H. A. (2016). *Microeconomic foundations for policy analysis in Ghana*. Friedrich Ebert Stiftung Ghana.
23. Sackey, H. A. (2016). *Microeconomic foundations for policy analysis in Ghana*. Friedrich Ebert Stiftung Ghana.

24. Samuelson, P. A., & Nordhaus, W. D. (2010). Economics (19th ed.). New York, NY: McGraw-Hill Education.
25. Services.
26. Sloman, J., Garratt, D., & Guest, J. (2018). Economics (10th ed.). Pearson Education Limited.
27. Sloman, J., Garratt, D., & Wride, A. (2018). Economics (10th ed.). Harlow, England: Pearson Education.
28. Sloman, J., Garratt, D., & Wride, A. (2022). Economics (12th ed.). Pearson
29. The CORE Team. (2017). The economy: Economics for a changing world. Oxford University Press.
30. Todaro, M. P., & Smith, S. C. (2020). Economic development (13th ed.). Pearson Education.
31. World Bank. (2020). Ghana public finance review: Building the foundations for a resilient and equitable fiscal policy. World Bank Group.

GLOSSARY

- **An agent:** a person who links buyers and sellers, earning a commission for each transaction completed.
- **Appreciation:** When the cedi's value increases compared to other currencies.
- **Assets:** Valuable items owned by the government, such as land, buildings or equipment.
- **Average Cost:** The total cost of production divided by the number of goods produced.
- **Average Utility:** Total utility divided by the number of units consumed.
- **Balanced Budget:** A budget where government revenue equals expenditure.
- **Borrowing:** Money the government obtains through loans to finance spending when revenue is insufficient.
- **Budget Deficit:** When government spending exceeds its revenue.
- **Budget Surplus:** When government revenue is greater than its expenditure.
- **Buy Rate:** The rate at which a bank buys foreign currency from you.
- **Cash Crop:** A crop grown mainly for sale rather than for personal consumption, e.g., cocoa.
- **Commercial Farming:** Large-scale farming for sale and profit, often using modern technology.
- **Consumer Confidence:** The level of optimism households have about their future income and the economy, influencing their spending behaviour.
- **Consumer Equilibrium:** The point where a consumer maximises their total satisfaction (utility) given their income and the prices of goods.
- **Consumer Responsiveness:** How strongly buyers react to changes in price, income or related goods.
- **Corporate Tax:** A tax on company profits.
- **Debt Servicing:** Payments made by the government to cover interest and repay borrowed funds.
- **Depreciation:** When the cedi's value decreases compared to other currencies.
- **Direct Channel** is where the producer sells directly to the final consumer without using middlemen.
- **Distribution** is the process of moving goods and services from producers to consumers at the right place, time and quantity.
- **Distributor** is a company or individual who handles the supply of goods from producers to various sellers.
- **Dividends:** Government earnings from profits made by state-owned enterprises.
- **E-commerce** is the buying and selling of goods and services through online platforms like websites, apps and social media.
- **Elastic:** When a small price change causes a big change in how much people buy.
- **Elasticity** measures how much one economic variable responds to a change in another.
- **Equilibrium:** A situation in which economic forces such as supply and demand are balanced.
- **Export Promotion:** Encouraging the production and sale of goods for foreign markets.

- **Factor Substitution** is the ability to switch inputs (like labour and machines) in production.
- **Fees:** Charges for government services like licences or permits.
- **Fines:** Monetary penalties for breaking laws or regulations.
- **Firm:** An individual business or producer that makes goods or provides services to earn profit.
- **Fixed Cost:** A cost that does not change with the level of output, such as rent or salaries.
- **Fixed Supply** refers to a condition where supply cannot change regardless of price changes.
- **Globalisation:** The growing interconnection of economies, markets, and cultures across the world.
- **Government Budget:** A financial plan outlining a government's projected revenue and expenditure for a specific period.
- **Grants:** Non-repayable funds received from other countries or organisations to support development projects.
- **Hicksian Decomposition:** A method used by economists to separate the substitution effect and income effect when prices change.
- **Import Substitution:** Replacing imported goods with locally produced alternatives to boost domestic industries.
- **Income Tax:** A tax on individuals' earnings.
- **Indirect Channel** is where goods pass through intermediaries such as wholesalers, agents or retailers before reaching consumers.
- **Industrialisation:** The process of developing industries to produce goods and services on a large scale.
- **Industry:** A group of firms that produce similar or related goods and services.
- **Inelastic:** When a price change causes only a small change in how much people buy.
- **Injections:** Additions of money into the economy through government spending, investment, or exports that boost total demand.
- **Interest Rate:** The percentage cost of borrowing money or the return earned on savings.
- **Investment:** Spending by businesses on capital goods like machinery and buildings to increase productive capacity.
- **Leakages:** Money that exits the circular flow of income through savings, taxes, or imports.
- **Long Run:** A time period in which all factors of production can be changed or adjusted by the firm.
- **Luxury goods:** A good that people want but do not need and may stop buying if prices go up.
- **Macroeconomic Variable:** A measurable indicator reflecting the performance of an economy, such as inflation or GDP.
- **Marginal Cost (MC):** The additional cost of producing one more unit of a good or service.
- **Marginal Revenue (MR):** The additional revenue a firm earns from selling one more unit of output.
- **Marginal Utility:** The extra satisfaction gained from consuming one more unit of a good or service.

- **Mechanisation:** The use of machines to increase efficiency and reduce labour in farming.
- **Middlemen** are the intermediaries, like agents, wholesalers or retailers, who are involved in moving goods from producers to consumers.
- **Mobile Distribution** is where goods are sold while moving, often using vans, bicycles or even on foot.
- **Mobility of Factors** is the ease with which resources move from one production use to another.
- **Monopoly:** A market condition where one firm controls the supply of a product with no close substitutes.
- **Multiplier:** The ratio showing how an initial change in spending leads to a larger change in national income.
- **Necessity goods:** A good that people need and will buy even if the price increases.
- **Normal Goods:** Goods people buy more of when their income increases.
- **Okun's Law:** An economic relationship where higher unemployment is linked to lower GDP.
- **Oligopoly:** A market dominated by a few large firms, often producing similar or related products.
- **Paradox of Thrift:** The idea that increased savings during a downturn can reduce overall spending and harm the economy.
- **Perishable Goods** are products that cannot last for a long period.
- **Phillips Curve:** A concept showing the inverse relationship between inflation and unemployment.
- **Price Stability** is a condition where prices do not change drastically over time.
- **Production Time** is the duration needed to produce a good and how it affects supply responsiveness.
- **Productivity:** A measure of how efficiently resources are used to produce goods or services.
- **Profit Maximisation:** The goal of a firm to make the highest possible profit from its operations.
- **Property Tax:** A tax on land or building ownership.
- **Purchasing Power:** The ability of consumers to buy goods and services with their income, depending on current prices.
- **Real Income:** The amount of goods and services a consumer can buy with their income, adjusted for price changes.
- **Retailer** is a person or business that sells goods and services directly to the final consumer, often in small units.
- **Sell Rate:** The rate at which a bank sells foreign currency to you.
- **Short Run:** A time period in which at least one factor of production is fixed.
- **Spare Capacity** is the unused resources that can be quickly used to increase production.
- **Subsidy:** Financial support from the government to reduce the price of a good or service.
- **Subsistence Farming:** Farming mainly to feed the farmer's family, with little or no surplus.

- **Substitute Goods:** These are goods that consumers can use in place of others.
Complementary Goods: These are goods that are used together with other goods.
- **Tariff:** A tax placed on imported goods to raise revenue or protect local industries.
- **Taxation Policy:** Government decisions about which goods to tax, often based on how elastic their demand is.
- **Tax Incidence:** The final burden of a tax is shared between producers and consumers.
- **Total Effect:** The overall change in quantity demanded after a price change, including both the income and substitution effects.
- **Total Utility:** The total satisfaction a person gets from consuming a certain quantity of goods or services.
- **Trade-Off:** A choice between two competing outcomes due to limited resources.
- **Trade Barrier:** Any regulation or policy that restricts international trade, like tariffs or quotas.
- **Utility:** The satisfaction or pleasure a consumer gets from using a good or service.
- **VAT (Value Added Tax):** A tax on the value added to goods at each production stage.
- **Wholesaler:** a person or business that buys goods in large quantities from producers and sells them in smaller quantities to retailers.

Acknowledgements



Ghana Education
Service (GES)



List of Contributors

Name	Institution
Salitsi Freeman Etornam	ANLO SHS
Benjamin Agyekum	Mangoase SHS
Enock Tetteh Kwabla	KROBO GIRLS' SHS