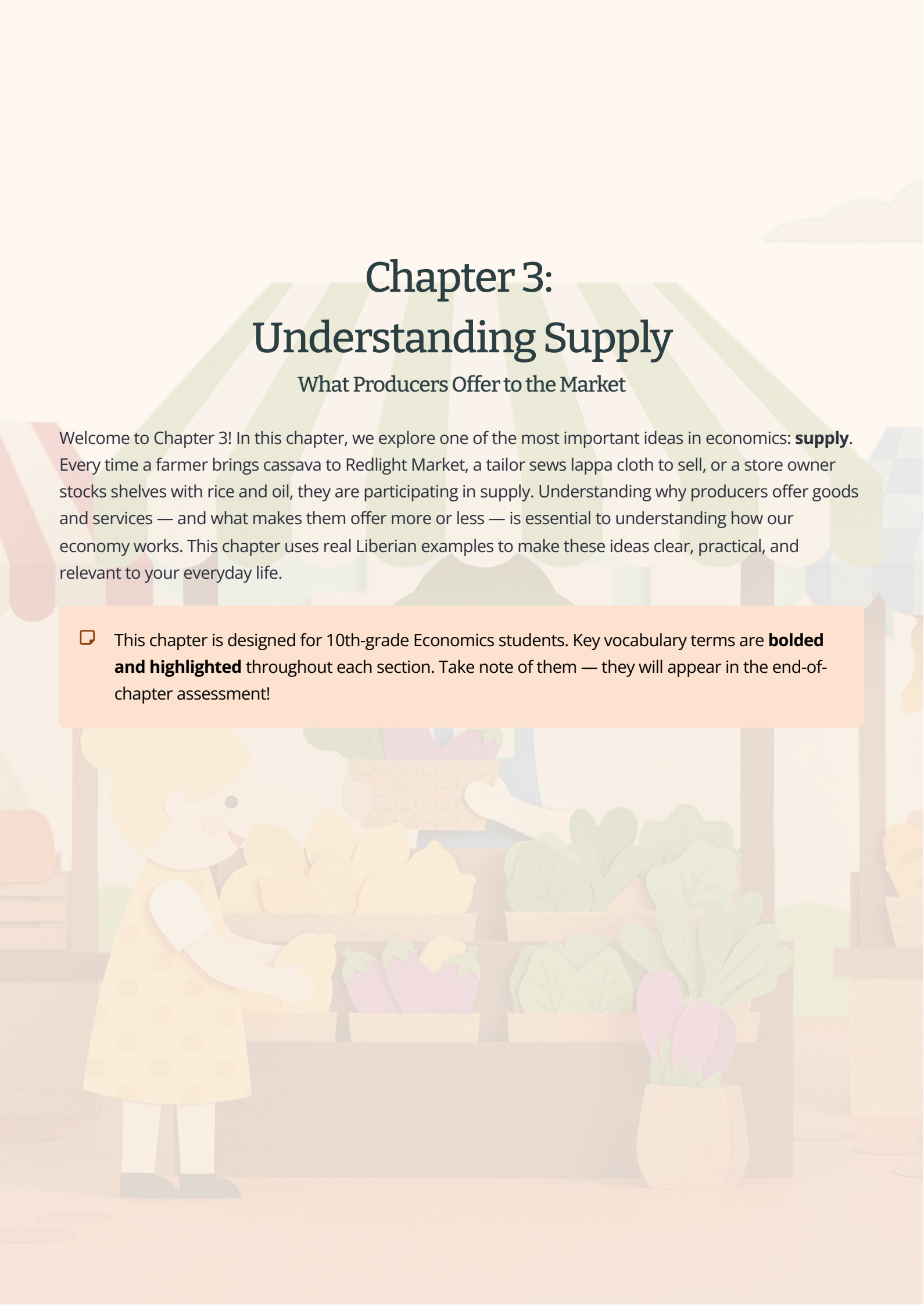




Chapter 3:

Understanding Supply

What Producers Offer to the Market

Welcome to Chapter 3! In this chapter, we explore one of the most important ideas in economics: **supply**. Every time a farmer brings cassava to Redlight Market, a tailor sews lappa cloth to sell, or a store owner stocks shelves with rice and oil, they are participating in supply. Understanding why producers offer goods and services — and what makes them offer more or less — is essential to understanding how our economy works. This chapter uses real Liberian examples to make these ideas clear, practical, and relevant to your everyday life.

- This chapter is designed for 10th-grade Economics students. Key vocabulary terms are **bolded and highlighted** throughout each section. Take note of them — they will appear in the end-of-chapter assessment!

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3.1 What Is Supply?

SECTION 3.1

CORE CONCEPT

Supply is defined as the various quantities of a good or service that producers are **willing and able** to offer for sale at different prices during a given period of time. Notice the two key words: *willing* and *able*. A farmer might be willing to sell mangoes at a certain price, but if a drought has destroyed the crop, they are not able to. Both conditions must be met for supply to exist.

Think about the rice traders at Waterside Market in Monrovia. When the price of a bag of rice rises, those traders are likely to bring more bags to sell because they can earn more profit. When prices fall, they may bring fewer bags. This relationship between price and quantity supplied is so consistent that economists have given it a special name.

The Law of Supply

The Law of Supply states: *All other things being equal (ceteris paribus), as the price of a good rises, the quantity supplied increases; and as the price falls, the quantity supplied decreases.*

This is a direct (positive) relationship — price and quantity move in the **same direction**.

Why Does This Happen?

Producers are motivated by **profit** — the money left over after all costs are paid. Higher prices mean more profit per unit sold, which encourages producers to supply more. Lower prices reduce profit incentives, so producers supply less or shift to other goods.

Example: If the price of palm oil jumps at Ganta market, palm oil producers in Nimba County will be encouraged to process and sell more — even if it means working longer hours.

3.1.1 Key Vocabulary for Section 3.1

Supply

The quantities of a good producers will offer at various prices over a period of time.

Quantity Supplied

The specific amount offered at one particular price at one specific moment.

Law of Supply

Price and quantity supplied move in the same direction, all else being equal.

Ceteris Paribus

Latin for "all other things being equal" — a key assumption in economic analysis.

Profit

Revenue minus costs; the key incentive driving producers to supply goods.

3.2 The Supply Schedule

A **supply schedule** is a table that shows the different quantities of a good that a producer is willing and able to supply at various prices. It is one of the most practical tools economists use to organize supply information before drawing a graph.

Below is a supply schedule for **Mary Kollie**, a cassava seller at the Kakata Market in Margibi County. The table shows how many bundles of cassava Mary is willing to bring to market each week at different prices (in Liberian Dollars).

Price per Bundle (LRD)	Quantity Supplied (Bundles/Week)
LRD 50	10 bundles
LRD 100	20 bundles
LRD 150	30 bundles
LRD 200	40 bundles
LRD 250	50 bundles

As you can see from Mary's supply schedule, every time the price increases by LRD 50, she is willing to bring 10 more bundles to market. This confirms the Law of Supply: higher prices encourage greater quantities supplied. The schedule gives us the raw data we need to draw a **supply curve**.

3.2.1 The Supply Curve

A **supply curve** is a graphical representation of the supply schedule. When we plot the price on the vertical (Y) axis and the quantity supplied on the horizontal (X) axis, and then connect the points, we get a line that **slopes upward from left to right**. This upward slope visually confirms the Law of Supply — as price rises, quantity supplied increases.

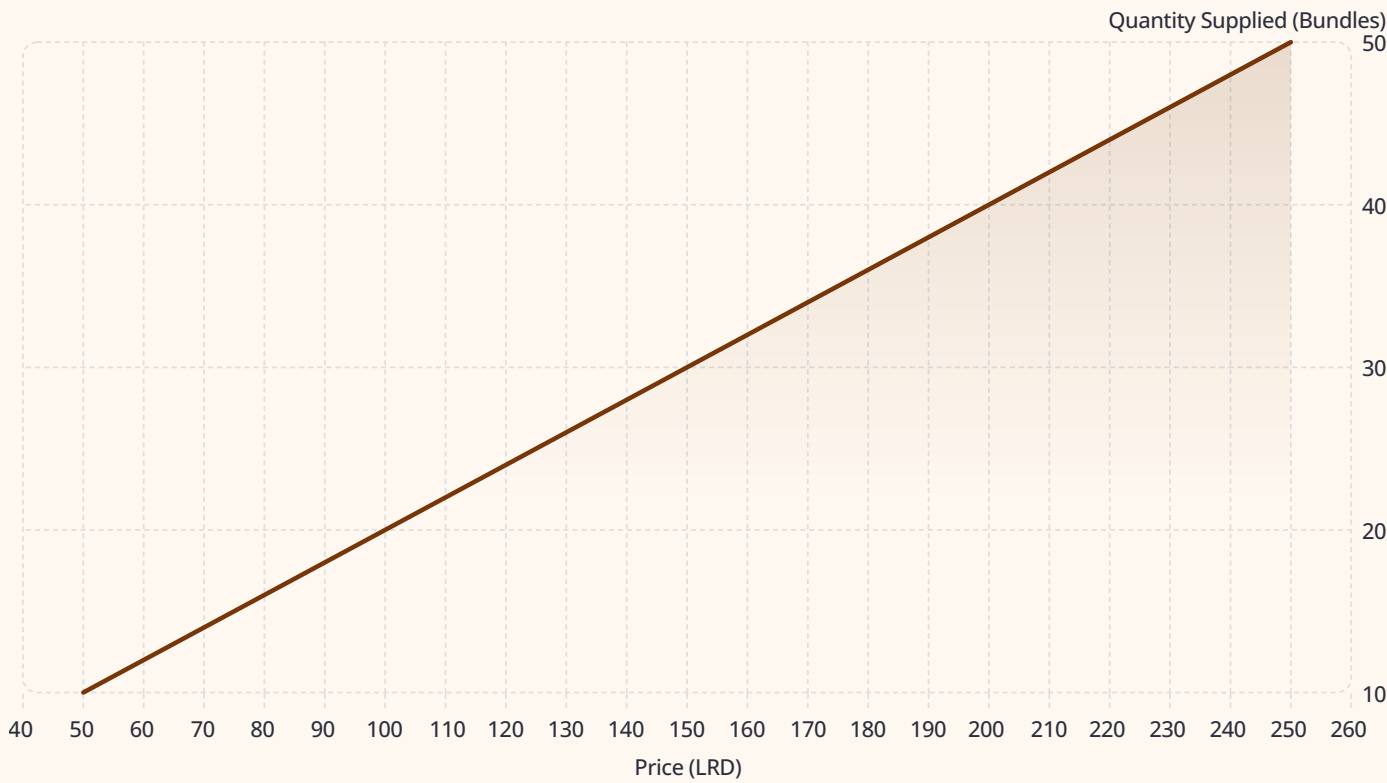


Figure 3.1: Mary Kollie's Cassava Supply Curve at Kakata Market. The upward slope illustrates the Law of Supply — as the price per bundle rises, Mary is willing to supply more bundles each week.

A movement along the supply curve happens when ONLY price changes. A **shift of the entire curve** happens when any non-price factor (determinant) changes. This distinction is critical — we will cover shifts in Section 3.4!

3.3 Individual vs. Market Supply

So far, we have looked at the supply of one individual seller — Mary Kollie. But markets involve many sellers. **Individual supply** refers to the supply of a single producer, while **market supply** is the total supply from all producers in the market combined.

To find market supply, economists simply add up the quantities supplied by all individual producers at each price level. This is called **horizontal summation**. Imagine that at Kakata Market, three cassava sellers — Mary, James, and Fatu — each have their own supply schedules. The market supply at any given price is the sum of all three sellers' quantities at that price.

Price (LRD)	Mary (Bundles)	James (Bundles)	Market Supply
LRD 50	10	8	18
LRD 100	20	16	36
LRD 150	30	24	54
LRD 200	40	32	72
LRD 250	50	40	90

Table 3.2: Individual and Market Supply for Cassava at Kakata Market (simplified to two sellers for illustration).

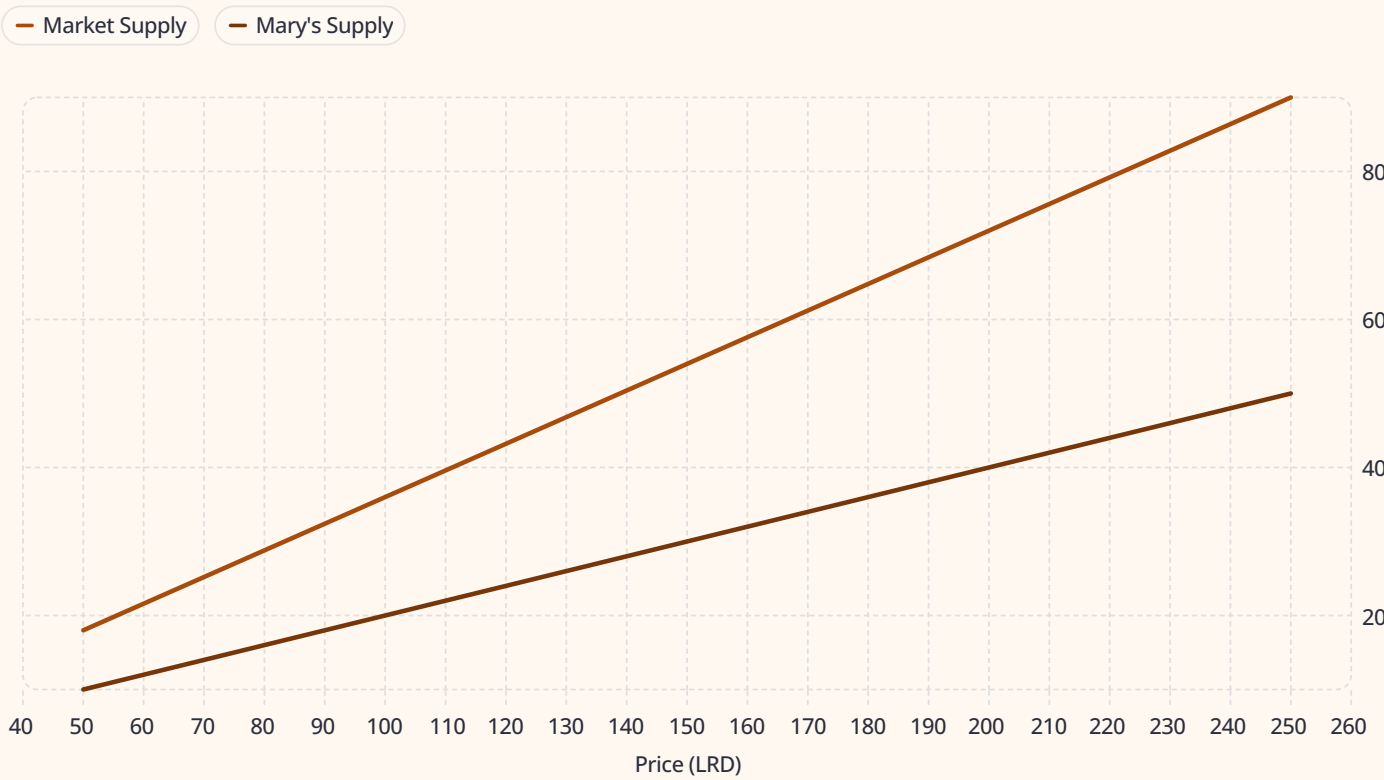


Figure 3.2: Individual Supply (Mary) vs. Market Supply at Kakata Market. The market supply curve lies to the right of the individual supply curve because it includes all sellers.

Notice that the market supply curve is **further to the right** than Mary's individual supply curve. This makes sense — more sellers in the market means more total quantity available at every price. When new sellers enter the market, the market supply curve shifts to the right. When sellers exit, it shifts left.

3.4 Factors That Shift Supply

SECTION 3.4

DETERMINANTS OF SUPPLY

Remember: a change in **price** causes a movement *along* the supply curve, not a shift. But there are other factors — called **determinants of supply** or **non-price factors** — that can shift the entire supply curve to the left or right. Economists identify six major determinants. When these change, the supply curve moves even if price stays the same.

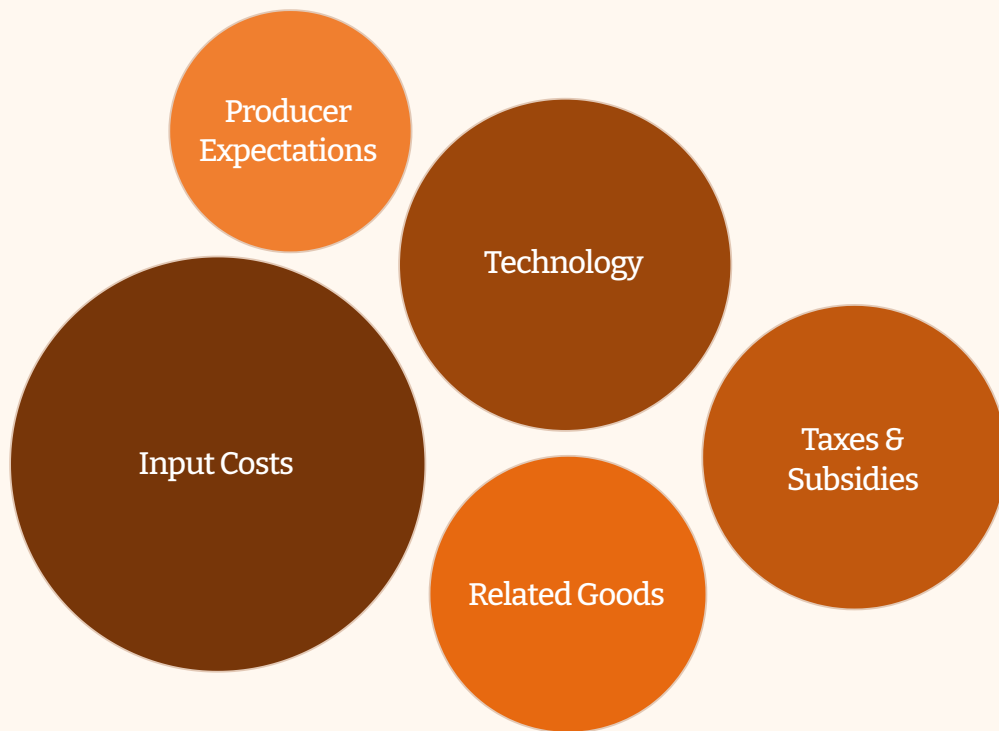


Figure 3.3: The six key determinants (non-price factors) that can shift the supply curve. A change in any one of these shifts the entire curve, not just a movement along it.

Each of these determinants interacts with Liberian producers in real and meaningful ways. In Sections 3.4.1 through 3.4.6, we will explore each factor individually, using familiar Liberian examples to bring the concepts to life. Pay close attention — understanding these shifts is one of the most important skills in introductory economics.

3.4.1 Input Costs (Cost of Production)

DETERMINANT 1

Input costs — also called costs of production — are the expenses producers pay to make their goods. These include raw materials, labor wages, fuel, and equipment. In Liberia, key inputs include seeds and fertilizer for farmers, fuel for fishing boats and trucks, and wages paid to workers on rubber and palm oil plantations.

The relationship between input costs and supply is **inverse**: when input costs rise, supply decreases (shifts left); when input costs fall, supply increases (shifts right). Here is the logic: if it becomes more expensive to produce a good, the producer earns less profit at every price level. This discourages production.

Liberian Example — Rubber Farmers

Imagine rubber tappers in Harbel, Margibi County. If the price of **fuel for processing machines rises** significantly — perhaps due to global oil price increases — the cost of processing rubber latex into usable sheets goes up. With higher production costs, rubber farmers may supply **fewer bales** of processed rubber to the market, even if the sale price of rubber itself has not changed. The supply curve shifts **left**.

Reverse Scenario — Lower Costs

Conversely, if the government provides subsidized fertilizer to cassava and rice farmers in Lofa County — reducing their input costs — those farmers can afford to plant more and bring **more produce** to market at every price level. The supply curve shifts **right**, meaning an increase in supply. This is why input cost management is central to agricultural policy in Liberia.



Key Vocabulary: Input costs = expenses to produce a good. Rising input costs → supply decreases (left shift). Falling input costs → supply increases (right shift).

3.4.2 Technology

DETERMINANT 2

Technology refers to the methods, tools, machines, and knowledge used to produce goods and services. When technology improves, producers can make more goods using the same — or fewer — resources. This lowers the cost per unit and increases supply. Technological improvement always shifts the supply curve to the **right** (an increase in supply).

In Liberia, technology upgrades have had measurable impacts on key industries. Consider these real-world scenarios:



Fishing in Grand Bassa

Traditional dugout canoe fishermen along the St. John River catch only a limited number of fish per day. When fishing communities gain access to **motorized boats and modern nets**, they can go further out to sea and haul in much larger catches — dramatically increasing the supply of fish available at Buchanan's markets.



Rice Milling in Lofa County

When rice farmers shift from hand-pounding to **mechanical rice mills**, they process much more rice in the same time. This technological improvement reduces labor costs and speeds up production, leading to greater quantities of milled rice supplied to Monrovia and other urban markets.



Mobile Money & Trade

While not a physical production tool, **mobile money platforms** like MTN Mobile Money have improved the efficiency of small business transactions in Liberia. Sellers can receive payments faster and restock more quickly, improving the flow of goods to market and effectively increasing market supply responsiveness.

It is important to note that in Liberia, access to modern technology remains uneven — urban areas like Monrovia benefit more than rural communities. This gap is a key policy challenge for increasing agricultural and industrial supply across the country.

3.4.3 Government Taxes and Subsidies

DETERMINANT 3

Governments play a powerful role in shaping supply through two main tools: **taxes** and **subsidies**. Understanding how each one works is essential for Liberian students, because the Liberian government regularly uses both to manage food security, business development, and revenue collection.

Taxes — Decrease Supply

A **tax** is a compulsory payment that producers must make to the government. When a tax is placed on a good, it raises the producer's cost of doing business. Since costs rise but the market price may not change, profit falls — and producers respond by supplying less.

Liberian Example: If the Liberian Revenue Authority (LRA) imposes a new import tax on imported fertilizer, the cost of farming rises for Liberian farmers. This could lead to reduced planting and a smaller harvest — decreasing the supply of rice, vegetables, and other food crops. The supply curve shifts **left**.

harvest—decreasing

Tax → ↑ Cost → ↓ Supply

Supply curve shifts LEFT. Producers supply less at every price.

Subsidy → ↓ Cost → ↑ Supply

Supply curve shifts RIGHT. Producers supply more at every price.

3.4.4 Prices of Related Goods

DETERMINANT 4

Producers can often use the same land, labor, or equipment to make **different products**. When the price of a related good changes, it can influence how much of another good a producer supplies. There are two types of related goods in production: **substitutes in production** and **complements in production**.

Substitutes in Production

Substitutes in production are goods that can be made using the same resources. If the price of one substitute rises, producers will shift their resources toward producing that good, reducing the supply of the other. This is extremely common in Liberian agriculture, where farmers decide each planting season which crops to grow based on expected market prices.

Liberian Example: Suppose a farmer in Bong County has five acres of land. She can plant either **cassava or sweet potato**. If the price of sweet potato rises sharply at Gbarnga Market, she may plant more sweet potato and less cassava. As a result, the supply of cassava in the market decreases, even though the price of cassava has not changed.

Complements in Production

Complements in production are goods produced together from the same resource — when you produce one, you automatically produce the other. These are less common, but important in industries like rubber and livestock.

Liberian Example: When rubber trees are tapped on plantations in Margibi or Grand Bassa, the process also yields **rubber wood** when trees are eventually felled. An increase in rubber production therefore also increases the supply of rubber wood available for furniture making and construction — a complementary production relationship.

3.4.5 Producer Expectations

DETERMINANT 5

Producer expectations refer to what sellers *anticipate* will happen to prices or market conditions in the future. Producers do not just respond to current prices — they also plan ahead. If a producer expects prices to rise in the future, they may **hold back** (withhold) supply now in order to sell later at a higher price. If they expect prices to fall, they may rush to sell as much as possible now.

Expecting Higher Future Prices

Effect: Decrease in current supply (left shift)

Liberian Example: Before the holiday season (Christmas and New Year), palm oil traders in Monrovia often expect prices to rise significantly as demand increases. In response, they may **reduce how much they sell in November**, storing their palm oil to sell at higher prices in December. This reduces current market supply even though they have not changed their production.

Expecting Lower Future Prices

Effect: Increase in current supply (right shift)

Liberian Example: If a rice importer hears that a large new shipment of imported rice is expected to arrive and drive prices down, they will try to **sell as much of their current stock as quickly as possible** before prices drop. This floods the current market with supply — a rightward shift.

Producer expectations demonstrate that supply is not just a mechanical response to current conditions — it is shaped by forward-looking decision-making. This is why news, government announcements, and weather forecasts can all influence the supply of goods in Liberian markets today.

3.4.6 Number of Sellers

DETERMINANT 6

The final major determinant of supply is the **number of sellers** (producers) in a market. The logic is simple and intuitive: more sellers mean more total supply; fewer sellers mean less total supply.

When new producers **enter** a market, total market supply increases — the market supply curve shifts to the **right**. When existing producers **exit** the market — perhaps because prices have fallen below their costs, or because they retire, or because regulations make entry difficult — total supply decreases and the market supply curve shifts to the **left**.

1

2

New Sellers Enter

More competition, more goods available. Market supply curve shifts **RIGHT**. Prices tend to fall.

Sellers Exit Market

Fewer producers, fewer goods. Market supply curve shifts **LEFT**. Prices tend to rise.

Liberian Example — Petty Trading in Monrovia: During periods of relative economic stability in Liberia, many small traders enter the market selling phone credit, water sachets, and cooked food along busy streets like Broad Street and Randall Street. This surge in the number of sellers increases market supply and tends to drive prices down. However, during economic crises — such as the 2014–2016 Ebola epidemic — many traders closed their businesses, reducing the number of sellers and causing supply to fall sharply while prices rose.

Larger Industry Example — Rubber: In the early 2000s, rising global rubber prices attracted many new rubber-tapping operations in Liberia. The entry of these new producers into the rubber market significantly increased Liberia's total rubber supply, contributing to the country's export earnings growth.

3.5 Increases and Decreases in Supply

SECTION 3.5

SUPPLY SHIFTS

Now that we understand all six determinants, let us bring them together by clearly defining what it means for supply to **increase** or **decrease**. This section summarizes the direction and effect of supply shifts, reinforced by a comprehensive Liberian example.

An Increase in Supply

An **increase in supply** occurs when producers offer **more of a good at every price level**. On a graph, this appears as the supply curve shifting to the **RIGHT**. Buyers can now get more of the good at the same price — or the same amount at a lower price.

Causes of an increase in supply:

- Falling input costs (e.g., cheaper seeds or fuel)
- Improved technology (e.g., better fishing equipment)
- Government subsidies to producers
- Falling prices of substitute goods in production
- Expectations of falling future prices
- More sellers entering the market

A Decrease in Supply

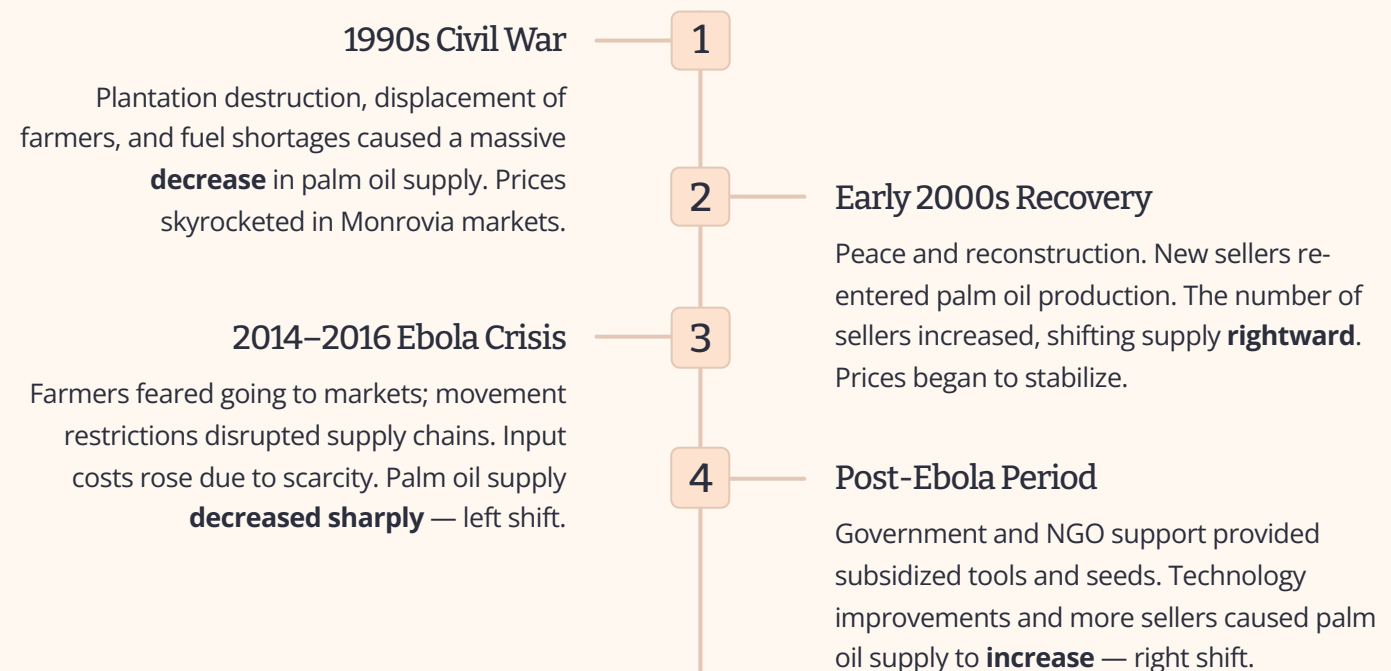
A **decrease in supply** occurs when producers offer **less of a good at every price level**. On a graph, this appears as the supply curve shifting to the **LEFT**. The same price now buys less of the good — or producers demand a higher price for the same quantity.

Causes of a decrease in supply:

- Rising input costs (e.g., higher fuel prices)
- Outdated or broken technology
- Government taxes on producers
- Rising prices of substitute goods in production
- Expectations of higher future prices
- Sellers exiting the market

3.5.1 Comprehensive Liberian Case Study — Palm Oil Supply

Palm oil is one of Liberia's most important domestic food products. Let us trace how various determinants have affected its supply in Liberian markets over the years.



Supply Curve Shifts — Visual Summary

SECTION 3.5

GRAPH ANALYSIS

The following chart compares a baseline supply scenario with an increased supply and a decreased supply — all based on the cassava market in Kakata. Studying these three curves together will help you visualize what a shift looks like compared to a movement along the curve.

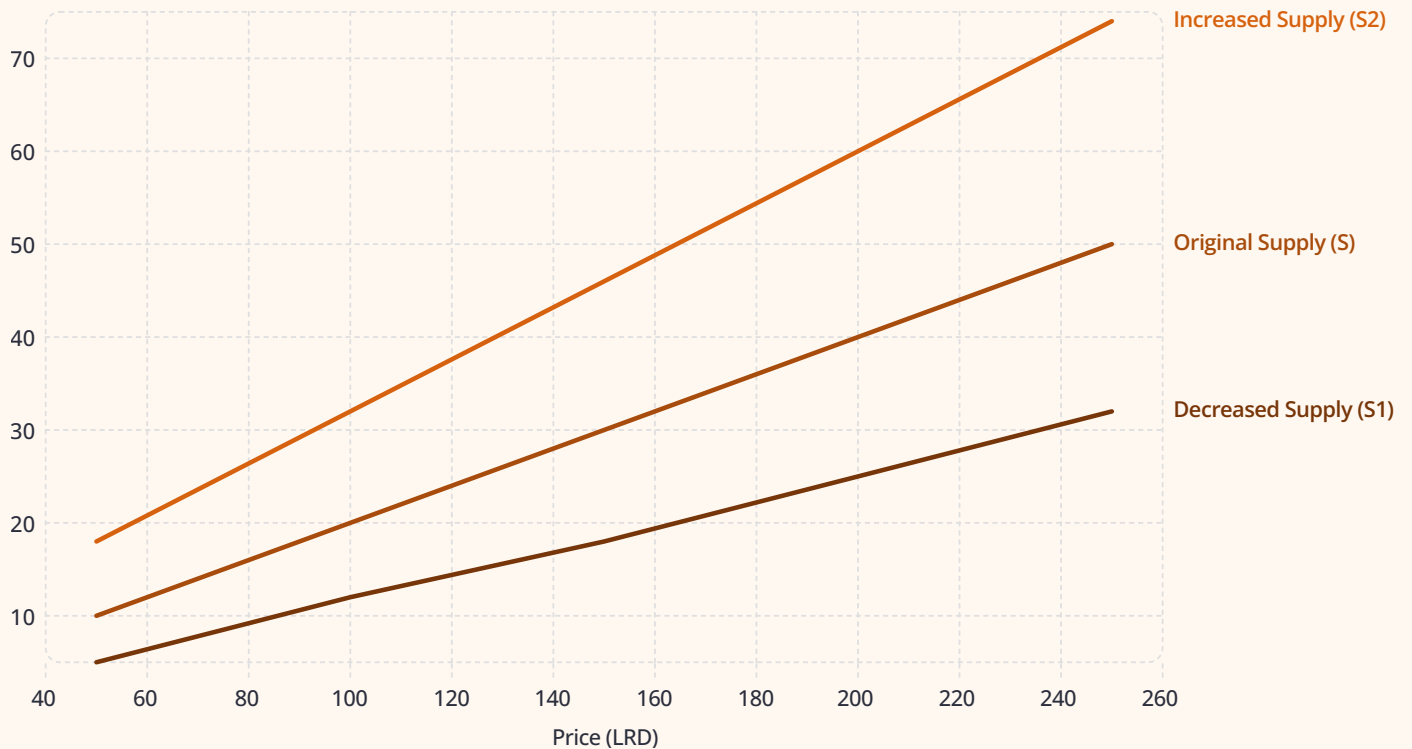


Figure 3.4: Supply Curve Shifts for Cassava at Kakata Market. S1 represents a decrease in supply (shifted left), S is the original supply, and S2 represents an increase in supply (shifted right). At every price level, S2 offers more cassava than S, and S1 offers less.

S1 — Decrease (Left Shift)

Fewer bundles at every price. Could be caused by drought, higher input costs, or a new tax on cassava farmers.

S — Original Supply

The baseline supply before any non-price change. This is Mary's original supply schedule from Section 3.2.

S2 — Increase (Right Shift)

More bundles at every price. Could be caused by improved planting technology, lower seed costs, or government subsidies.

3.6 Price Elasticity of Supply

SECTION 3.6

ELASTICITY

Not all producers can respond equally quickly to price changes. **Price elasticity of supply (PES)** measures **how responsive the quantity supplied is to a change in price**. It answers the question: if the price of a good rises, how much more will producers supply?

The formula for price elasticity of supply is:

$$PES = \frac{\% \text{ Change in Quantity Supplied}}{\% \text{ Change in Price}}$$

Elastic Supply (PES > 1)

When supply is **elastic**, a small price increase leads to a **large increase** in quantity supplied. Producers can respond quickly and easily. Supply is elastic when:

- Production can be increased quickly
- Raw materials are easily available
- Spare capacity exists in factories or farms

Liberian Example: Street food vendors in Monrovia (pepper soup, rice and stew sellers) can quickly increase their output if prices rise — they buy more ingredients from nearby markets and cook more portions. Their supply is relatively elastic.

Inelastic Supply (PES < 1)

When supply is **inelastic**, even a large price increase leads to only a **small increase** in quantity supplied. Producers cannot respond quickly. Supply is inelastic when:

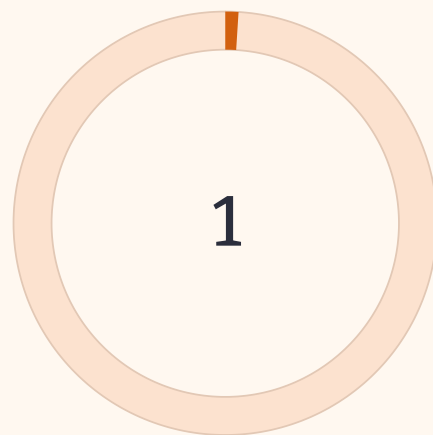
- Production takes a long time (e.g., growing trees)
- Specialized skills or equipment are needed
- Land or resources are limited

Liberian Example: Rubber trees take 5–7 years to mature before they can be tapped. Even if rubber prices double today, a Liberian rubber farmer cannot significantly increase supply for several years. Rubber supply is highly inelastic in the short run.



Years to Grow Rubber

Illustrates why rubber supply is inelastic — producers cannot respond quickly to price increases.



Day to Make More Street Food

Street food vendors can respond within hours or a day — making their supply highly elastic.

3.6.1 Factors Affecting Price Elasticity of Supply

SECTION 3.6

Several factors determine whether supply is elastic or inelastic in Liberia and globally. Understanding these helps policymakers design better economic programs and helps businesses plan production strategies.



Time Period

Supply is almost always **more elastic in the long run** than in the short run. Over time, producers can build new facilities, train workers, and plant new crops. In the short run, they are limited by existing capacity. Liberian cassava farmers can plant more next season but cannot magically harvest more today.



Spare Productive Capacity

If a producer has **idle land, unused machines, or available workers**, they can quickly scale up production when prices rise. Many small Liberian businesses operate below full capacity, which means they can respond more elastically to favorable price signals.



Ability to Store Goods

Goods that can be **stored easily** have more elastic supply because producers can release stockpiles when prices rise. Rice, canned fish, and palm oil (in containers) are storable. Fresh fish, ripe mangoes, and leafy vegetables spoil quickly — making their supply more inelastic.



Ease of Factor Substitution

When it is easy to **switch inputs** — for example, using a different crop on the same land, or substituting one material for another — supply tends to be more elastic. Liberian farmers with flexible land use can shift between crops more easily than specialized plantations.

Chapter 3 — Key Vocabulary Summary

VOCABULARY REVIEW

Before attempting the end-of-chapter assessment, review all the key vocabulary terms introduced in this chapter. Understanding these terms is essential for success in examinations and for applying economic thinking to real-world situations in Liberia and beyond.

Term	Definition
Supply	The various quantities of a good or service producers are willing and able to offer for sale at different prices during a given period.
Quantity Supplied	The specific amount of a good offered at one particular price at one specific moment in time.
Law of Supply	As price rises, quantity supplied increases; as price falls, quantity supplied decreases — all else being equal.
Ceteris Paribus	Latin phrase meaning "all other things being equal" — a key assumption in economic analysis.
Supply Schedule	A table showing quantities a producer is willing to supply at various prices.
Supply Curve	A graph plotting the supply schedule; slopes upward from left to right.
Individual Supply	The supply from a single producer.
Market Supply	The total supply from all producers in a market, found by horizontal summation.
Determinants of Supply	Non-price factors that shift the supply curve: input costs, technology, taxes/subsidies, prices of related goods, expectations, number of sellers.
Subsidy	A government payment to producers to lower costs and encourage more production.
Tax	A compulsory payment to the government that raises production costs and decreases supply.
Price Elasticity of Supply (PES)	A measure of how responsive quantity supplied is to a change in price.
Elastic Supply	$PES > 1$; quantity supplied is very responsive to price changes.
Inelastic Supply	$PES < 1$; quantity supplied responds little to price changes.
Substitutes in Production	Goods that can be produced using the same resources; a price rise in one reduces supply of the other.
Complements in Production	Goods produced jointly; increased production of one increases supply of the other.

3.7 End-of-Chapter Assessment

ASSESSMENT

SECTION 3.7

This assessment is designed to test your understanding of the key concepts covered in Chapter 3. Answer all questions as fully and carefully as you can. Use examples from Liberia where possible — they demonstrate your ability to apply economic thinking to your own context.

- This assessment covers Sections 3.1 through 3.6. Review your key vocabulary table before starting. Show all work where calculations are required.

3.7.1 Section A — Multiple Choice

10 QUESTIONS · 1 POINT EACH

Choose the best answer for each question. Circle or write the letter of your answer.

1. The Law of Supply states that, all other things being equal: (a) As price rises, quantity supplied falls. (b) As price rises, quantity supplied rises. (c) As price falls, quantity supplied rises. (d) Price and quantity supplied are unrelated.
2. Which of the following is a NON-PRICE determinant of supply? (a) The market price of cassava (b) The number of buyers (c) The cost of fertilizer (d) Consumer income
3. When the government gives farmers free seeds, this is called a: (a) Tax (b) Tariff (c) Subsidy (d) Fine
4. If the price of palm oil is expected to rise next month, a producer will most likely: (a) Increase supply now (b) Decrease supply now (c) Keep supply the same (d) Exit the market
5. A rightward shift in the supply curve represents: (a) An increase in demand (b) A decrease in supply (c) An increase in supply (d) A movement along the supply curve
6. Rubber trees take 5–7 years to mature. This means rubber supply in the short run is: (a) Elastic (b) Perfectly elastic (c) Inelastic (d) Perfectly inelastic
7. Mary Kollie decides to plant sweet potatoes instead of cassava because sweet potato prices are higher. This is an example of: (a) Complements in production (b) Substitutes in production (c) A change in technology (d) Government intervention
8. The market supply curve is found by: (a) Subtracting individual supply curves (b) Averaging individual supply curves (c) Horizontally summing individual supply curves (d) Dividing total supply by number of sellers
9. Which formula correctly calculates the Price Elasticity of Supply? (a) $\% \text{ Change in Price} \div \% \text{ Change in QS}$ (b) $\% \text{ Change in QS} \div \% \text{ Change in Price}$ (c) $\text{Change in Price} \times \text{Change in QS}$ (d) $\text{Change in QS} - \text{Change in Price}$
10. If new rubber-tapping companies enter the Liberian market, this will cause the market supply of rubber to: (a) Decrease and curve shifts left (b) Increase and curve shifts right (c) Stay the same (d) Become perfectly inelastic

3.7.2 Section B — Vocabulary Match

10 POINTS

Match each term in **Column A** with the correct definition in **Column B**. Write the letter of the correct definition next to each term number.

Column A — Terms	Column B — Definitions
1. Ceteris Paribus	A. A table showing quantities supplied at various prices
2. Subsidy	B. Measures how responsive QS is to a price change
3. Supply Schedule	C. Latin for "all other things being equal"
4. Market Supply	D. Government payment to producers to lower costs
5. Price Elasticity of Supply	E. The total supply of all producers in a market
6. Inelastic Supply	F. $PES > 1$; quantity responds greatly to price changes
7. Elastic Supply	G. Goods produced together from the same resource
8. Complements in Production	H. $PES < 1$; quantity responds little to price changes
9. Law of Supply	I. Price and quantity supplied move in the same direction
10. Determinants of Supply	J. Non-price factors that shift the supply curve

3.7.3 Section C — Short Answer Questions

25 POINTS

Answer each question in 3–5 sentences. Use Liberian examples wherever possible. Each question is worth 5 points.

Question 1

Explain the Law of Supply in your own words. Give one example from a Liberian market to illustrate your explanation. (5 pts)

Question 2

What is the difference between a **movement along** the supply curve and a **shift of** the supply curve? Draw a simple diagram to support your answer. (5 pts)

Question 3

James is a rice farmer in Lofa County. The government places a new tax on rice production. Using the concept of **determinants of supply**, explain what will happen to James's supply of rice and the market supply curve. (5 pts)

Question 4

Fatu is a palm oil producer who hears on the radio that palm oil prices are expected to triple next month due to a shortage. What decision might Fatu make about her **current supply**, and why? Name the determinant involved. (5 pts)

Question 5

Using the concept of **price elasticity of supply**, explain why a Liberian rubber producer cannot respond as quickly to a price increase as a street food vendor in Monrovia. What factor mainly accounts for this difference? (5 pts)

3.7.4 Section D — Data Analysis & Graphing

20 POINTS · CRITICAL THINKING

Study the supply schedule below for **John Kollie**, a fish seller at Buchanan Market in Grand Bassa County. Then answer the questions that follow. Show all work.

Price per Basket of Fish (LRD)	Quantity Supplied (Baskets/Week)
LRD 100	5
LRD 200	10
LRD 300	15
LRD 400	20
LRD 500	25

- (5 pts)** Using the data in the table, draw John Kollie's supply curve on a clearly labeled graph. Place Price on the Y-axis and Quantity Supplied on the X-axis. Does the curve slope upward or downward? What does this tell us?
- (5 pts)** Suppose the government of Liberia introduces a fuel subsidy that reduces the cost of powering John's motorized fishing boat by 30%. On the SAME graph, draw the NEW supply curve (S2). In which direction does it shift, and why?
- (5 pts)** Three new fishing families from Sinoe County move to Buchanan and begin selling fish at the same market. What happens to the MARKET supply of fish? Show this on a third supply curve (S3) on the same graph.
- (5 pts)** Calculate the Price Elasticity of Supply (PES) if price rises from LRD 200 to LRD 300 and quantity supplied rises from 10 to 15 baskets. Is supply elastic or inelastic over this range? Explain what this means for John's ability to respond to price changes.

3.7.5 Section E — Essay Question

20 POINTS · EXTENDED RESPONSE

Instructions: Write a well-organized essay of approximately 3–4 paragraphs answering the question below. Your essay should demonstrate your understanding of supply concepts and include specific Liberian examples. Use correct economic terminology and refer to supply curve shifts in your answer. You will be graded on accuracy (10 pts), use of Liberian examples (5 pts), and writing quality (5 pts).

Essay Question: "Between 2014 and 2016, the Ebola epidemic severely disrupted the supply of food and goods in Liberian markets. Using your knowledge of the determinants of supply and the concept of supply shifts, analyze THREE specific factors that caused supply to decrease during this period. For each factor, explain the economic mechanism involved, name the determinant, and describe the effect on the supply curve. Then suggest ONE government policy that could help restore supply in a similar future crisis."

Grading Rubric

Accuracy (10 pts): Correctly identifies 3 determinants, explains each mechanism, and describes curve shift direction accurately.

Liberian Context (5 pts)

Examples (5 pts): Uses specific, relevant Liberian examples (named counties, goods, or economic events) to support each point.

Writing Quality (5 pts)

Quality (5 pts): Paragraphs are organized logically, ideas flow clearly, sentences are complete, and economic vocabulary is used correctly.

3.8 Citations and References

SECTION 3.8

ACADEMIC SOURCES

The following sources were used in preparing this chapter. Students and teachers are encouraged to consult these works for deeper understanding of supply theory and its application in developing economies like Liberia. All citations follow the APA 7th Edition format.

Core Economics Textbooks

Case, K. E., Fair, R. C., & Oster, S. M. (2020). *Principles of economics* (13th ed.). Pearson Education.

Mankiw, N. G. (2021). *Principles of economics* (9th ed.). Cengage Learning.

McConnell, C. R., Brue, S. L., & Flynn, S. M. (2021). *Economics: Principles, problems, and policies* (22nd ed.). McGraw-Hill Education.

Liberian & African Context Sources

Central Bank of Liberia. (2022). *Annual report 2022*.

Central Bank of Liberia. <https://www.cbl.org.lr>

Food and Agriculture Organization (FAO). (2021). *Liberia: Country brief — Food and agriculture*. FAO. <https://www.fao.org/liberia>

International Monetary Fund (IMF). (2023). *Liberia: Article IV consultation staff report*. IMF Country Report No. 23/78.

Ministry of Agriculture, Republic of Liberia. (2019). *National agriculture investment plan II (NAIP II) 2017–2021*. Government of Liberia.

Ebola Economic Impact Sources

World Bank Group. (2016). *Liberia economic monitor: Recovery from Ebola*. The World Bank. <https://www.worldbank.org/liberia>

United Nations Development Programme (UNDP). (2015). *Assessing the socioeconomic impacts of Ebola virus disease in Guinea, Liberia, and Sierra Leone*. UNDP Africa.

3.8.1 Recommendations for Further Reading

SECTION 3.8

FURTHER READING

If you would like to explore supply theory and Liberian economics further, the following resources are highly recommended. Some are available online for free; others may be found in school or public libraries.



For Students — Introductory Level

1. "Economics" by Paul Samuelson and William Nordhaus —

A classic introductory text that explains all core economic concepts with clear language and plenty of real-world examples. Chapters on supply and demand are especially helpful.

2. Khan Academy Economics (Free Online) — Khan Academy offers free video lessons on supply, demand, elasticity, and market equilibrium at www.khanacademy.org/economics. These are ideal for self-study and exam review.



For Students — Intermediate Level

3. "Naked Economics: Undressing the Dismal Science" by Charles Wheelan —

This highly readable book explains economic concepts without heavy math. It is perfect for students who want to understand how economics applies to real life in Africa and around the world.

4. World Bank Liberia Data Portal — The World Bank maintains free data and reports on Liberia's economy, agriculture, and trade at data.worldbank.org/country/liberia. Very useful for data-based research projects.



For Teachers — Advanced Resources

5. "Development Macroeconomics" by Pierre-Richard Agénor and Peter J. Montiel — A rigorous academic text covering supply-side economics in developing countries, including Sub-Saharan African contexts. Recommended for teachers seeking to deepen their content knowledge.

6. African Development Bank Reports on Liberia — Available free online at www.afdb.org, these reports provide current data on Liberia's agricultural production, commodity markets, and policy environment — invaluable for contextualizing supply concepts.

3.8.2 Index of Key Terms

INDEX

SECTION 3.8

Use this index to quickly locate key terms and concepts within Chapter 3. Numbers refer to the section where each term is first introduced or most fully explained.

A – C

Ceteris Paribus — Section 3.1

Complements in Production — Section 3.4.4

Cost of Production — Section 3.4.1

D – I

Decrease in Supply — Section 3.5

Determinants of Supply — Section 3.4

Elastic Supply — Section 3.6

Horizontal Summation — Section 3.3

Increase in Supply — Section 3.5

Individual Supply — Section 3.3

Inelastic Supply — Section 3.6

Input Costs — Section 3.4.1

L – P

Law of Supply — Section 3.1

Market Supply — Section 3.3

Movement Along Supply Curve — Section 3.2

Number of Sellers — Section 3.4.6

Price Elasticity of Supply (PES) — Section 3.6

Producer Expectations — Section 3.4.5

Profit — Section 3.1

S – T

Subsidy — Section 3.4.3

Supply — Section 3.1

Supply Curve — Section 3.2

Supply Schedule — Section 3.2

Substitutes in Production — Section 3.4.4

Tax — Section 3.4.3

Technology — Section 3.4.2

- ✔ Congratulations on completing Chapter 3! You now have a solid foundation in supply theory, including the Law of Supply, supply schedules, supply curves, the six determinants of supply, supply shifts, and price elasticity of supply — all contextualized within the Liberian economy. Proceed to Chapter 4 to explore **Demand** and how supply and demand interact to determine market prices.