ECONOMICS SS TWO

***INSTRUCTION:*** *Print the complete notes*

**SECOND TERM SCHEME OF WORK**

**WEEKS TOPICS**

1. Population Census
2. Population Growth in West Africa
3. Population Density
4. Population Distribution
5. Cost Concept
6. Relationship between Total Cost, Average Cost, and Marginal Cost
7. National Income
8. Measurement of National Income of a Country
9. Theory of Income Determination
10. Revision

**POPULATION CENSUS**

A population census is the systematic collection and analysis of data about a country's population. It involves counting the number of people living in a country, state, or local government area. A population census is a complete snapshot of a nation’s people. It provides information on the size, location, and characteristics of a population. It is the backbone of a national statistical system.

**Importance of Population Census**

1. **Planning and Development:** Accurate population data helps governments plan and allocate resources for infrastructure, education, healthcare, and other essential services.

2. **Resource Allocation:** Census data informs the distribution of funds, resources, and services to different regions and communities.

3. **Economic Development:** Population data helps businesses and investors understand market trends, consumer behavior, and labor force dynamics.

4. **Social Services:** Census data guides the provision of social services, such as education, healthcare, and housing.

**Types of Population Census**

1. **De Jure Census:** Counts people according to their usual place of residence.

2. **De Facto Census:** Counts people according to their actual location on the census day.

**Census Data Collection Methods**

1. **Door-to-Door Enumeration:** Enumerators visit households to collect data.

2. **Self-Enumeration:** Respondents fill out census forms themselves.

3. **Online Census:** Data collection through online platforms.

**Challenges Facing Population Census**

1. **Undercounting:** Some individuals or groups may not be counted.

2. **Over counting:** Some individuals may be counted multiple times.

3. **Data Quality Issues:** Inaccurate or incomplete data.

**Conclusion**

Population census is a vital tool for understanding a country's demographic characteristics, guiding development planning, and allocating resources effectively. Accurate and reliable census data is essential for informed decision-making.

**DETERMINANTS OF POPULATION SIZE AND GROWTH**

The determinants of population size and growth can be categorized into three main groups: fertility, mortality, and migration.

**Fertility**

1. Birth Rate (Crude Birth Rate): The number of live births per 1,000 people per year.

2. Total Fertility Rate (TFR): The average number of children a woman would have in her lifetime.

3. Age-Specific Fertility Rates: The number of births per 1,000 women of a specific age group per year.

4. Marriage and Family Patterns: Age at marriage, family size, and spacing of children.

**Mortality**

1. Death Rate (Crude Death Rate): The number of deaths per 1,000 people per year.

2. Infant Mortality Rate: The number of deaths of infants under one year of age per 1,000 live births.

3. Life Expectancy: The average number of years a person is expected to live.

4. Disease Patterns: Prevalence of diseases, epidemics, and pandemics.

**Migration**

1. Immigration: The number of people moving into a country or region.

2. Emigration: The number of people leaving a country or region.

3. Net Migration: The difference between immigration and emigration.

**Other Factors**

1. Economic Factors: Income, employment, education, and access to healthcare.

2. Social Factors: Culture, religion, family planning, and social norms.

3. Environmental Factors: Natural disasters, climate change, and access to resources.

4. Government Policies: Family planning programs, healthcare policies, and migration laws.

These determinants interact with each other and with other factors to influence population size and growth. Understanding these factors is essential for developing effective population policies and programs.

**POPULATION GROWTH IN WEST AFRICA**

West Africa is one of the regions with the highest population growth rates in the world. Some of the key reasons contributing to high population growth in West Africa include:

1. High Total Fertility Rate (TFR): West African countries have some of the highest TFRs in the world, with an average of 4.5-5 children per woman.

2. Early Marriage and Childbearing: Many girls in West Africa marry and start childbearing at a young age, contributing to high fertility rates.

3. Limited Access to Family Planning: Many people in West Africa lack access to modern family planning methods, leading to unintended pregnancies.

4. Cultural and Social Norms: Large family sizes are often seen as a blessing and a source of labor in many West African cultures.

5. Limited Education and Economic Opportunities: Women's education and economic opportunities are often limited, leading to a reliance on children as a source of support in old age.

6. High Infant Mortality Rates: Although infant mortality rates have declined in recent years, they remain high in many West African countries, leading to a desire for more children to compensate for potential losses.

7. Rapid Urbanization: Urbanization can lead to increased access to healthcare and education, but it can also lead to increased fertility rates due to improved economic opportunities.

8. Lack of Government Support for Family Planning: Some West African governments have not prioritized family planning and reproductive health in their development agendas.

9. Inadequate Healthcare Systems: Weak healthcare systems can make it difficult for people to access quality reproductive health services, including family planning.

10. Poverty and Food Insecurity: Poverty and food insecurity can lead to a desire for more children as a means of ensuring food security and economic support in old age.

Some of the countries in West Africa with the highest population growth rates include:

- Niger (3.2% annual growth rate), Mali (3.0% annual growth rate), Chad (2.9% annual growth rate), Guinea-Bissau (2.8% annual growth rate), Sierra Leone (2.7% annual growth rate)

Addressing these underlying factors will be crucial to slowing population growth in West Africa and ensuring sustainable development in the region.

**Advantages of a Large Population**

1. Increased Workforce: A large population provides a significant workforce, which can contribute to economic growth and development.

2. Diverse Skills and Talents: A large population brings together people with various skills, talents, and experiences, fostering innovation and creativity.

3. Economies of Scale: A large population can support large-scale industries, leading to economies of scale and reduced costs.

4. Market Size: A large population provides a substantial market for goods and services, attracting businesses and investments.

5. Cultural Diversity: A large population often leads to cultural diversity, enriching society with different perspectives, traditions, and values.

6. Government Revenue: A large population can generate significant tax revenue, enabling governments to fund public services and infrastructure.

**Disadvantages of a Large Population**

1. Resource Depletion: A large population can lead to the depletion of natural resources, such as water, land, and minerals.

2. Environmental Degradation: Increased consumption and waste generation can result in environmental degradation, pollution, and climate change.

3. Infrastructure Strains: A large population can put pressure on infrastructure, including housing, transportation, and public services.

4. Unemployment and Poverty: A large population can lead to unemployment, poverty, and income inequality, particularly if economic growth is slow.

5. Social Services Overload: A large population can overwhelm social services, such as healthcare, education, and social welfare programs.

6. Increased Competition: A large population can lead to increased competition for resources, jobs, and services, potentially causing social tensions.

7. Urbanization Challenges: Rapid urbanization can result in slum formation, inadequate housing, and poor living conditions.

8. Food Security Concerns: A large population can strain food systems, leading to food insecurity and malnutrition.

**Balancing the Advantages and Disadvantages**

To maximize the benefits of a large population while minimizing the drawbacks, governments and policymakers can implement strategies such as:

1. Sustainable Development: Encourage sustainable practices, invest in renewable energy, and promote eco-friendly technologies.

2. Education and Family Planning: Provide access to education and family planning resources to manage population growth.

3. Infrastructure Development: Invest in infrastructure development, including housing, transportation, and public services.

4. Social Services: Strengthen social services, such as healthcare, education, and social welfare programs.

5. Economic Diversification: Foster economic diversification, entrepreneurship, and innovation to create jobs and opportunities.

By adopting a balanced approach, countries with large populations can harness the advantages while mitigating the disadvantages, ensuring a brighter future for their citizens.

**Population Density**

Population density refers to the number of people living in a given area, usually measured in square kilometers or square miles. It is calculated by dividing the total population of an area by its land area.

**Formula**

Population Density = Total Population / Land Area

**Units**

Population density is typically expressed in units such as:

- People per square kilometer (pp/km²)

- People per square mile (pp/mi²)

**Types of Population Density**

1. Arithmetic Density: The total population divided by the total land area.

2. Physiological Density: The total population divided by the arable land area.

3. Agricultural Density: The total population divided by the agricultural land area.

**Factors Affecting Population Density**

1. Geography: Mountainous, coastal, or desert regions can affect population density.

2. Climate: Extreme temperatures, rainfall, or natural disasters can impact population density.

3. Economy: Urbanization, industrialization, and economic opportunities can influence population density.

4. Government Policies: Zoning laws, urban planning, and migration policies can affect population density.

**Effects of High Population Density**

1. Environmental Degradation: Increased pollution, resource depletion, and waste management issues.

2. Infrastructure Strains: Overcrowding, traffic congestion, and pressure on public services.

3. Social Issues: Increased competition for resources, housing shortages, and potential social unrest.

4. Economic Challenges: Higher costs of living, increased poverty, and reduced quality of life.

**Effects of Low Population Density**

1. Economic Challenges: Limited economic opportunities, reduced tax base, and decreased government revenue.

2. Social Isolation: Reduced access to services, limited social interactions, and potential mental health issues.

3. Environmental Challenges: Increased vulnerability to natural disasters, reduced environmental monitoring, and potential conservation issues.

**Examples of Population Density**

1. Singapore: 8,140 pp/km² (one of the highest in the world)

2. Mongolia: 2 pp/km² (one of the lowest in the world)

3. New York City: 10,430 pp/km² (high population density)

4. Alaska: 0.5 pp/km² (low population density)

Understanding population density is essential for urban planning, resource management, and sustainable development.

**MALTHUSIAN POPULATION THEORY**

The Malthusian population theory, proposed by Thomas Malthus in 1798, states that population growth tends to outstrip food supply, leading to poverty, famine, and societal collapse. The theory is based on the following principles:

1. Population grows exponentially: Malthus argued that population grows rapidly, doubling in size every 25 years, due to high birth rates.

2. Food supply grows linearly: In contrast, food production increases at a much slower rate, leading to a mismatch between population growth and food availability.

3. Resource scarcity: As population grows, resources such as land, water, and food become scarce, leading to increased competition and conflict.

4. Poverty and famine: The inevitable result of population growth outstripping food supply is poverty, famine, and societal instability.

**Malthus' Predictions**

Malthus predicted that population growth would lead to:

1. Overpopulation: Population would exceed the available resources, leading to widespread poverty and famine.

2. Food shortages: Insufficient food production would lead to scarcity, high prices, and social unrest.

3. Societal collapse: The strain on resources would ultimately lead to societal collapse, as people would be unable to survive without adequate food and resources.

**Criticisms and Limitations**

The Malthusian theory has been criticized for its:

1. Oversimplification: The theory assumes a simple, linear relationship between population growth and food supply, ignoring complex factors like technological innovation and social change.

2. Lack of empirical evidence: Malthus' predictions were not supported by empirical data, and many countries have since achieved significant economic growth and food security.

3. Ignoring human innovation: The theory fails to account for human ingenuity and technological advancements that can increase food production and improve resource management.

**Modern Relevance**

While the Malthusian theory has been largely discredited, its ideas remain relevant in modern discussions of:

1. Sustainable development: The importance of balancing population growth with resource availability and environmental sustainability.

2. Food security: Ensuring adequate food production and distribution to meet the needs of a growing global population.

3. Resource management: Managing resources like water, land, and energy to mitigate the effects of population growth.

In conclusion, the Malthusian population theory, while flawed, highlights the importance of considering the relationship between population growth, resource availability, and societal well-being.

**Demographic Transition Theory**

The Demographic Transition Theory (DTT) explains how the population of a country changes over time, from a pre-industrial, high-birth-rate regime to a modern, low-birth-rate regime. The theory proposes that countries go through four stages of demographic transition, driven by changes in fertility and mortality rates.

**Stage 1:** High Birth and Death Rates (Pre-Industrial)

- High birth rates (35-40 per 1,000 people)

- High death rates (30-35 per 1,000 people)

- Population growth is slow due to high mortality rates

- Typical of pre-industrial societies with limited access to healthcare and sanitation

**Stage 2:** High Birth Rates, Falling Death Rates (Early Industrial)

- Birth rates remain high (35-40 per 1,000 people)

- Death rates decline due to improvements in healthcare, sanitation, and nutrition (15-20 per 1,000 people)

- Population growth accelerates as the gap between birth and death rates widens

- Typical of early industrial societies with improving living standards

**Stage 3:** Falling Birth Rates, Low Death Rates (Late Industrial)

- Birth rates decline as family planning becomes more widespread (15-20 per 1,000 people)

- Death rates continue to decline due to further improvements in healthcare and living standards (5-10 per 1,000 people)

- Population growth slows as the gap between birth and death rates narrows

- Typical of late industrial societies with high levels of urbanization and education

**Stage 4:** Low Birth and Death Rates (Post-Industrial)

- Birth rates are low (10-15 per 1,000 people)

- Death rates are low (5-10 per 1,000 people)

- Population growth is slow or even negative due to low fertility rates

- Typical of post-industrial societies with high levels of economic development and social security

**Stage 5:** Low Birth Rates, Aging Population (Optional)

- Some countries may experience a fifth stage, characterized by very low birth rates (below replacement level) and an aging population

- This stage is often associated with significant social and economic challenges, such as labor shortages and increased healthcare costs

The Demographic Transition Theory provides a useful framework for understanding the complex relationships between population growth, fertility, mortality, and economic development. However, it is not a universal theory, and different countries may experience variations on this theme due to unique cultural, historical, and economic factors.

**Population Distribution**

Population distribution refers to the way people are spread out across a particular area, such as a country, region, or city. It can be measured in terms of the number of people per unit area, such as population density.

**Factors Affecting Population Distribution**

1. Geography: Mountains, rivers, and coastlines can affect population distribution by creating natural barriers or attractions.

2. Climate: Extreme temperatures, rainfall, or natural disasters can make certain areas more or less habitable.

3. Economy: Job opportunities, industries, and resources can draw people to certain areas.

4. Infrastructure: Roads, transportation, and amenities can make certain areas more accessible and attractive.

5. Government Policies: Zoning laws, urban planning, and migration policies can influence population distribution.

6. Culture: Historical, social, and cultural factors can shape population distribution, such as the concentration of certain ethnic or linguistic groups.

**Types of Population Distribution**

1. Urban: Concentration of people in cities and towns.

2. Rural: Dispersion of people in countryside and villages.

3. Sub-urban: Intermediate density areas surrounding cities.

4. Linear: Population concentrated along transportation routes, such as highways or coastlines.

**Patterns of Population Distribution**

1. Central Place Theory: Population concentrates around central places, such as cities or towns, which provide services and amenities.

2. Gravity Model: Population distribution is influenced by the gravitational pull of larger cities or economic centers.

3. Sector Model: Population distribution is shaped by sectors or wedges of development, such as industrial or residential areas.

**Consequences of Population Distribution**

1. Resource Management: Uneven population distribution can lead to resource depletion or strain on local infrastructure.

2. Environmental Impact: Concentrated populations can lead to environmental degradation, pollution, and loss of biodiversity.

3. Social and Economic Disparities: Uneven population distribution can exacerbate social and economic inequalities.

4. Urban Planning: Understanding population distribution is crucial for effective urban planning, transportation, and service provision.

**Examples of population distribution include**

Megacities: Large cities like Tokyo, New York, or Mumbai, which concentrate millions of people.

Rural areas: Sparsely populated regions like the American Midwest or the Australian Outback.

Sub-urban sprawl: Low-density areas surrounding cities, like the suburbs of Los Angeles or London.

**High Population in Nigeria**

Nigeria has a high population due to several factors, including:

1. High Birth Rate: Nigeria has a total fertility rate (TFR) of 5.3 children per woman, which is one of the highest in the world.

2. Large Youth Population: Over 60% of Nigeria's population is under the age of 25, which contributes to a high population growth rate.

3. Rapid Urbanization: Nigeria is experiencing rapid urbanization, with many people moving from rural areas to cities in search of better economic opportunities.

4. Limited Access to Family Planning: Many Nigerians, particularly in rural areas, lack access to modern family planning methods, leading to high birth rates.

5. Cultural and Social Factors: Large family sizes are often seen as a blessing in Nigerian culture, and many people believe that having many children is a way to ensure economic security in old age.

**Low Population Density in Nigeria**

Despite having a high population, Nigeria has a relatively low population density due to its large land area. Some factors contributing to this include:

1. Vast Land Area: Nigeria has a land area of approximately 923,768 square kilometers, which is one of the largest in Africa.

2. Rural-Urban Migration: While many people are moving to cities, there are still many rural areas with low population densities.

3. Geographical Barriers: Nigeria's geography, including its mountains, forests, and rivers, can make it difficult for people to settle in certain areas.

4. Economic Factors: Some areas of Nigeria, particularly in the north, are less economically developed, which can lead to lower population densities.

5. Conflict and Security Issues: Certain regions of Nigeria, such as the northeast, have experienced conflict and security issues, leading to displacement and lower population densities.

**Regional Variations**

Population density varies significantly across different regions of Nigeria. For example:

1. Lagos State: Has a population density of over 13,000 people per square kilometer, making it one of the most densely populated areas in Africa.

2. Kano State: Has a population density of around 400 people per square kilometer, which is relatively high compared to other parts of the country.

3. Bornu State: Has a population density of around 50 people per square kilometer, which is relatively low due to the state's large land area and security challenges.

Overall, Nigeria's high population and low population density are influenced by a complex interplay of factors, including cultural, economic, geographical, and security considerations.

**Mathematical Approach to Population Studies**

The mathematical approach to population studies involves using mathematical models and techniques to analyze and understand population dynamics. This approach is essential in demography, as it helps to:

1. Forecast population growth: Mathematical models can be used to predict future population growth, taking into account factors such as fertility, mortality, and migration.

2. Analyze population structure: Mathematical techniques can be used to analyze the age and sex structure of a population, which is crucial for understanding population dynamics.

3. Model population processes: Mathematical models can be used to simulate population processes, such as birth, death, and migration, and to understand how these processes interact.

Some common mathematical models used in population studies include:

1. Exponential growth model: This model assumes that population growth is proportional to the current population size.

2. Logistic growth model: This model assumes that population growth is limited by carrying capacity, and that growth slows down as the population approaches this capacity.

3. Leslie matrix model: This model is used to analyze the age structure of a population and to forecast future population growth.

4. Life table analysis: This method is used to analyze the mortality experience of a population and to estimate life expectancy.

Mathematical techniques used in population studies include:

1. Differential equations: These are used to model population growth and to analyze the dynamics of population processes.

2. Matrix algebra: This is used to analyze the age structure of a population and to forecast future population growth.

3. Statistical analysis: This is used to analyze demographic data and to estimate demographic parameters.

Some of the key demographic parameters that are estimated using mathematical models include:

1. Crude birth rate: The number of births per 1,000 people per year.

2. Crude death rate: The number of deaths per 1,000 people per year.

3. Total fertility rate: The average number of children a woman would have in her lifetime.

4. Life expectancy: The average number of years a person can expect to live.

The mathematical approach to population studies has many applications, including:

1. Policy planning: Mathematical models can be used to evaluate the impact of different policy interventions on population growth and demographic outcomes.

2. Resource allocation: Mathematical models can be used to allocate resources effectively, taking into account demographic trends and projections.

3. Research: Mathematical models can be used to test hypotheses and to understand the underlying mechanisms of population dynamics.

Overall, the mathematical approach to population studies provides a powerful tool for analyzing and understanding population dynamics, and for informing policy and planning decisions.

**COST CONCEPTS**

In economics and business, costs are a crucial aspect of decision-making. There are several cost concepts that help organizations and individuals understand and manage costs effectively.

1. Fixed Costs: These are costs that remain the same even if the level of production or activity changes. Examples include rent, salaries, and insurance.

2. Variable Costs: These are costs that vary directly with the level of production or activity. Examples include raw materials, labor, and marketing expenses.

3. Semi-Variable Costs: These are costs that have both fixed and variable components. Examples include utilities and maintenance costs.

4. Opportunity Costs: These are the costs of choosing one option over another. It's the value of the next best alternative that is given up.

5. Sunk Costs: These are costs that have already been incurred and cannot be changed. Examples include investments in equipment or research and development.

6. Marginal Costs: These are the additional costs incurred to produce one more unit of a good or service.

7. Average Costs: These are the total costs divided by the number of units produced.

8. Total Costs: These are the sum of all costs, including fixed, variable, and semi-variable costs.

**Cost Classification**

Costs can also be classified into different categories, including:

1. Direct Costs: These are costs that can be directly attributed to a specific product or service.

2. Indirect Costs: These are costs that cannot be directly attributed to a specific product or service.

3. Overhead Costs: These are costs that are not directly related to production, such as administrative and marketing expenses.

4. Capital Costs: These are costs associated with the purchase or acquisition of assets, such as equipment or property.

**Cost Behaviour**

Understanding how costs behave is crucial for decision-making. Costs can behave in different ways, including:

1. Linear Cost Behavior: Costs increase or decrease in a straight line as the level of production or activity changes.

2. Non-Linear Cost Behavior: Costs do not increase or decrease in a straight line as the level of production or activity changes.

3. Step Cost Behavior: Costs remain the same until a certain level of production or activity is reached, and then increase or decrease.

By understanding these cost concepts, organizations and individuals can make informed decisions about resource allocation, pricing, and investment.

**Relationship between Total Cost, Average Cost, and Marginal Cost**

In economics, the relationship between total cost, average cost, and marginal cost is crucial for understanding the behavior of costs and making informed decisions.

**Total Cost (TC)**

The total cost is the sum of all costs incurred by a firm or individual to produce a certain quantity of goods or services.

**Average Cost (AC)**

The average cost is the total cost divided by the quantity of goods or services produced. It represents the cost per unit of production.

**Marginal Cost (MC)**

The marginal cost is the additional cost incurred to produce one more unit of goods or services.

**Relationship between TC, AC, and MC**

1. TC = AC x Q: The total cost is equal to the average cost multiplied by the quantity of goods or services produced.

2. MC = ΔTC / ΔQ: The marginal cost is equal to the change in total cost divided by the change in quantity of goods or services produced.

3. AC = TC / Q: The average cost is equal to the total cost divided by the quantity of goods or services produced.

**Graphical Representation**

The relationship between TC, AC, and MC can be represented graphically using a cost curve diagram.

i. The total cost curve (TC) is typically upward-sloping, indicating that as the quantity of goods or services produced increases, the total cost also increases.

ii. The average cost curve (AC) is typically U-shaped, indicating that as the quantity of goods or services produced increases, the average cost initially decreases and then increases.

iii. The marginal cost curve (MC) is typically upward-sloping, indicating that as the quantity of goods or services produced increases, the marginal cost also increases.

**Importance of the Relationship**

Understanding the relationship between TC, AC, and MC is crucial for firms and individuals to make informed decisions about production, pricing, and investment. For example:

- A firm may use the marginal cost to determine the optimal quantity of goods or services to produce.

- A firm may use the average cost to determine the price of goods or services.

- A firm may use the total cost to evaluate the overall profitability of a project or investment.

By analyzing the relationship between TC, AC, and MC, firms and individuals can optimize their production and pricing decisions, leading to increased efficiency and profitability.

**Concepts of Explicit and Implicit Costs**

In economics, costs are classified into two main categories: explicit costs and implicit costs. Understanding the difference between these two types of costs is crucial for businesses, individuals, and organizations to make informed decisions.

**Explicit Costs**

Explicit costs are direct, out-of-pocket expenses that are easily measurable and quantifiable. They are the actual payments made by a firm or individual to acquire goods, services, or resources. Examples of explicit costs include:

1. Wages and salaries: Payments made to employees for their labor.

2. Rent: Payments made for the use of land, buildings, or equipment.

3. Raw materials: Costs of purchasing inputs, such as materials, components, or supplies.

4. Utilities: Payments made for electricity, water, gas, or other services.

5. Equipment and machinery: Costs of purchasing or leasing equipment, vehicles, or other assets.

**Implicit Costs**

Implicit costs, on the other hand, are indirect, opportunity costs that are not explicitly paid or recorded. They represent the value of resources that could have been used elsewhere, but are instead used in the current activity or business. Examples of implicit costs include:

1. Opportunity cost of capital: The return on investment that could have been earned if the capital was invested elsewhere.

2. Opportunity cost of labor: The value of alternative uses of labor, such as leisure time or other employment opportunities.

3. Opportunity cost of entrepreneurship: The value of alternative uses of entrepreneurial skills, such as starting a different business or pursuing other opportunities.

4. Depreciation: The decrease in value of assets over time, due to wear and tear, obsolescence, or other factors.

**Key Differences**

The main differences between explicit and implicit costs are:

1. Direct vs. indirect: Explicit costs are direct, out-of-pocket expenses, while implicit costs are indirect, opportunity costs.

2. Measurability: Explicit costs are easily measurable and quantifiable, while implicit costs are more difficult to measure and quantify.

3. Recorded vs. unrecorded: Explicit costs are typically recorded in financial statements, while implicit costs are not explicitly recorded.

**Importance of Considering both Explicit and Implicit Costs**

Both explicit and implicit costs are important to consider when making business decisions, as they can significantly impact profitability, efficiency, and competitiveness. By accounting for both types of costs, businesses and individuals can:

1. Make informed decisions: About investments, resource allocation, and pricing strategies.

2. Optimize resource use: By considering the opportunity costs of resources, businesses can optimize their use and minimize waste.

3. Improve profitability: By minimizing explicit costs and maximizing the value of implicit costs, businesses can improve their profitability and competitiveness.

**Short-Run and Long-Run Costs**

In economics, costs are classified into two main categories: short-run costs and long-run costs. Understanding the difference between these two types of costs is crucial for businesses and individuals to make informed decisions.

**Short-Run Costs**

Short-run costs refer to the costs incurred by a firm or individual over a short period of time, typically less than a year. During this period, some costs are fixed, while others are variable. Short-run costs include:

1. Fixed Costs: Costs that remain the same even if the level of production changes, such as rent, salaries, and insurance.

2. Variable Costs: Costs that change with the level of production, such as raw materials, labor, and marketing expenses.

3. Total Variable Costs: The sum of all variable costs.

4. Total Fixed Costs: The sum of all fixed costs.

5. Total Costs: The sum of total variable costs and total fixed costs.

**Long-Run Costs**

Long-run costs refer to the costs incurred by a firm or individual over a long period of time, typically more than a year. In the long run, all costs are variable, and firms can adjust their production levels and inputs to minimize costs. Long-run costs include:

1. Long-Run Average Cost: The average cost of production over a long period of time.

2. Long-Run Marginal Cost: The additional cost of producing one more unit of output in the long run.

3. Economies of Scale: The cost advantages that firms can achieve by increasing their production levels.

4. Diseconomies of Scale: The cost disadvantages that firms can experience by increasing their production levels.

**Key Differences**

The main differences between short-run and long-run costs are:

1. Time period: Short-run costs refer to costs incurred over a short period of time, while long-run costs refer to costs incurred over a long period of time.

2. Fixed and variable costs: In the short run, some costs are fixed, while others are variable. In the long run, all costs are variable.

3. Adjustment period: In the short run, firms cannot adjust their production levels and inputs quickly. In the long run, firms can adjust their production levels and inputs to minimize costs.

**Importance of Understanding Short-Run and Long-Run Costs**

Understanding short-run and long-run costs is crucial for businesses and individuals to make informed decisions about production, pricing, and investment. By analyzing short-run and long-run costs, firms can:

1. Minimize costs: By adjusting their production levels and inputs to minimize costs in the short run and long run.

2. Maximize profits: By producing at the optimal level and adjusting their prices to maximize profits.

3. Make informed investment decisions: By considering the long-run costs and benefits of investments.

**Distinction between Economist's and Accountant's Views on Cost**

Economists and accountants have different perspectives on cost, which can lead to distinct approaches to decision-making and analysis.

**Economist's View**

From an economist's perspective, cost is considered an opportunity cost, which is the value of the next best alternative that is given up when a choice is made. This view emphasizes the concept of scarcity and the idea that resources are limited. Economists consider both explicit and implicit costs, including:

1. Opportunity costs: The value of alternative uses of resources, such as labor, capital, or raw materials.

2. Implicit costs: The value of resources that are not explicitly paid for, such as the owner's labor or capital.

3. Sunk costs: Costs that have already been incurred and cannot be changed, such as investments in equipment or research and development.

Economists focus on the marginal cost, which is the additional cost of producing one more unit of a good or service. This approach helps economists to analyze the efficiency of production and make decisions about resource allocation.

**Accountant's View**

From an accountant's perspective, cost is considered a historical cost, which is the actual amount paid for a resource or asset. This view emphasizes the concept of financial reporting and the need to accurately record and report costs. Accountants focus on:

1. Explicit costs: The actual amounts paid for resources, such as labor, materials, and overhead.

2. Historical costs: The original cost of acquiring an asset, which is used as the basis for depreciation and amortization.

3. Financial reporting: The presentation of costs in financial statements, such as the income statement and balance sheet.

Accountants focus on the absorption costing method, which involves assigning all costs, including fixed and variable costs, to products or services. This approach helps accountants to determine the cost of goods sold and calculate profit.

**Key Distinctions**

The main distinctions between the economist's and accountant's views on cost are:

1. Opportunity cost vs. historical cost: Economists consider opportunity costs, while accountants focus on historical costs.

2. Implicit costs vs. explicit costs: Economists include implicit costs, while accountants only consider explicit costs.

3. Marginal cost vs. absorption costing: Economists focus on marginal cost, while accountants use absorption costing.

These differences in perspective can lead to different conclusions and recommendations for decision-making. Economists may emphasize the importance of considering opportunity costs and marginal costs, while accountants may focus on accurately recording and reporting historical costs.

**Cost of Production Schedule**

A cost of production schedule is a table or chart that shows the various costs of producing different quantities of a product or service. It is a useful tool for businesses to analyze and understand the relationship between production levels and costs.

**Elements of a Cost of Production Schedule**

A typical cost of production schedule includes the following elements:

1. Quantity of Output: The different quantities of the product or service being produced.

2. Total Fixed Costs (TFC): The fixed costs that remain the same regardless of the level of production, such as rent, salaries, and insurance.

3. Total Variable Costs (TVC): The variable costs that change with the level of production, such as raw materials, labor, and marketing expenses.

4. Total Costs (TC): The sum of total fixed costs and total variable costs.

5. Average Fixed Costs (AFC): The total fixed costs divided by the quantity of output.

6. Average Variable Costs (AVC): The total variable costs divided by the quantity of output.

7. Average Total Costs (ATC): The total costs divided by the quantity of output.

8. Marginal Costs (MC): The additional cost of producing one more unit of output.

Example of a Cost of Production Schedule (Go to Page 245 Essential Economics)

Overall, the cost of production schedule is a useful tool for businesses to understand their costs and make informed decisions about production levels and pricing.

**Mathematical Approach to Costs**

The mathematical approach to costs involves using mathematical models and techniques to analyze and understand the behavior of costs. This approach is useful for businesses and organizations to make informed decisions about production, pricing, and investment.

**Cost Functions**

A cost function is a mathematical equation that describes the relationship between the cost of production and the level of output. The cost function can be represented as:

C(x) = FC + VC(x)

where:

- C(x) is the total cost of production

- FC is the fixed cost

- VC(x) is the variable cost

- x is the level of output

**Types of Cost Functions**

There are several types of cost functions, including:

1. Linear Cost Function: C(x) = FC + VCx

2. Non-Linear Cost Function: C(x) = FC + VCx^2

3. Cubic Cost Function: C(x) = FC + VCx^3

**Cost Minimization**

The mathematical approach to costs can be used to minimize costs. The cost minimization problem can be represented as:

Minimize C(x) = FC + VC(x)

Subject to:

x ≥ 0

The solution to this problem can be found using calculus, specifically the first-order condition:

dC(x)/dx = 0

**Cost Optimization**

The mathematical approach to costs can also be used to optimize costs. The cost optimization problem can be represented as:

Maximize Profit = Revenue - Cost

Subject to:

x ≥ 0

The solution to this problem can be found using calculus, specifically the first-order condition:

dProfit/dx = 0

**Mathematical Techniques**

Several mathematical techniques can be used to analyze costs, including:

1. Calculus: used to find the minimum or maximum of a cost function

2. Linear Algebra: used to solve systems of linear equations

3. Optimization Techniques: used to find the optimal solution to a cost minimization or maximization problem

**Applications**

The mathematical approach to costs has several applications, including:

1. Production Planning: used to determine the optimal level of production

2. Pricing: used to determine the optimal price of a product

3. Investment Analysis: used to evaluate the profitability of an investment

Overall, the mathematical approach to costs provides a powerful tool for businesses and organizations to analyze and understand the behavior of costs, and to make informed decisions about production, pricing, and investment.

**NATIONAL INCOME**

**DEFINING NATIONAL INCOME**

As individuals and firms keep account of their economic activities such as their annual report which shows all their activities during the past year, countries too like individuals and firms do record and keep their economic activities.

**National Income**- is defined as the monetary value of the total volume of goods and services produced by a country in a year. It is the money value of the total income earned by all the factors of production in a given country over a period of time usually a year. On the other hand, it is the sum total of money value of all individual expenditure on goods and services at the market price.

The National Income is different from the income of the government which refers to the revenue the government raises through taxation and borrowing.

**DEFINITION OF CONCEPTS**

**A**. **Gross Domestic Product (GDP):** This is defined as the total monetary value of all the goods and services produced in a country in a year by all the residents of the country regardless of whether they are citizens or foreigners. It relates to a closed economy, that is, it excludes the earnings or investment of citizens abroad but includes the earnings of foreigners or earnings from foreign investment in the country.

It can be measured at factor cost (adding together of production) or at the market prices.

In its calculation, no allowance is made for depreciation. So, it is best expressed as the addition of these three aggregates.

 GDP = C + I + G

 where C = Consumption

 I = Investment

 G = Government expenditure

The GDP is used as an economic indicator in determining whether the country is growing, declining or stagnant.

**B**.  **Gross National Product (GNP):** This is the monetary value of goods and services produced by the citizens of a country (including income from their investments both at home and abroad).

It is the total value of goods and services plus Net income from abroad which can be represented as ( x – m ) where x = export and m = import

That is to say, it includes the earnings of the citizens or their investment in other countries but excludes the earnings of foreigners or their investment in the country. In this case, no allowance is also made for depreciation.

 Mathematically, it is expressed as: GNP = GDP + Net Income from abroad; or

 = GDP + x – m; or

 = C + I + G + x – m

**C**. **Net Domestic Product (NDP):** It is defined as the total monetary value of goods and services produced by all the residents of a country and earnings from their investment (whether citizens or foreigners) after allowance have been made for depreciation.

 Mathematically, it is represented as:

 NDP = GDP - Depreciation; or

 = C + I + G – Depreciation

**D**. **Net National Product (NNP):** This is the difference between GNP and estimated Depreciation or capital consumed during the year; this is the GNP less depreciation. This is the monetary value of goods and services produced by all the citizens of a country and income from their investments (whether at home or abroad) after allowance has been made for depreciation.

NNP = GNP – Depreciation; or

 = C + I + G + (x – m) – Depreciation

**E**. **Personal Income:** This is the earnings of an individual in monetary terms for taking part in the production of goods and services either by him or his property. It includes wages to labour for its` services, interest received by capital owner, rent paid to the owner of the land, and profit received by an entrepreneur.

**F**. **Disposable Income:** This is the income from all sources that accrue to household and private non- profit institutions after deducting personal income tax and other transfers to them. It is the income actually available for spending and saving.

 It can therefore be summarized as: Disposable Income = Personal Income – Personal Tax.

1. **Per Capita Income (PCI):** It is the national Income head of the population . It is the National Income divided by the total population of a country. It is an economic indication of a country’s level of standard of living. Whether the PCI of a country is high or low depends majorly on the available resources and the size of the population of the country.

However, an increase in GNP of a country does not mean an increase in PCI.

By formula, it is expressed as PCI = GNP / Total population

**MEASUREMENT OF NATIONAL INCOME OF A COUNTRY**

1. **Income Approach**: In this method, the total monetary values of income received by individuals, business organizations, government agencies within a year for their participation in production. The income received by factors of production in the form of wages or salaries, rent, interest and profits is added together. To avoid double-counting, transfer incomes or payments are not included. By using this approach, we arrive at either the G.N.P or G.D.P at factor cost.
2. **Output or Net product Approach**: - This is based on the census of production. It measures the value of all goods and services produced in a country during the year. To avoid double-country, income is measured on a value- added basis. (Value-added is the value of output, less cost of input). Natural income derived in this way gives the G.D.P at market prices. To get the G.D.P at factor cost, we subtract taxes and add subsidies.
3. **Expenditure Approach**: - This is the calculation of the total monetary value of expenditure on goods and services by government individual organization etc. within a country in a given period. In this calculation expenditure on inter mediate goods and services bought and used for further production must be excluded. This is done in order to avoid double counting and therefore, the calculation should particularize only on expenditure on the monetary value of final goods and services.

**REASONS WHY A COUNTRY MEASURES HER NATIONAL INCOME**

* 1. It gives an indication of the standard of living of the country through the measure of per capita income.
	2. It helps the country to determine the growth rate of the economy
	3. The national income estimate is vital for economic policy and planning.
	4. Measured through the output approach enables the country to know the performance of the various sectors of the economy.
	5. The national income data gives an idea of the pattern of expenditure of households.
	6. It influences foreign investments. Foreign investors usually seek countries with rich or fast growing markets.
1. It forms the basis for contribution to international organizations.

**PROBLEMS ASSOCIATED WITH NATIONAL INCOME MEASUREMENT**

1. They do not reveal the income distribution in a country. National income estimate does not indicate whether income is widely spread or concentrated in a few hands.
2. There is a difference in the internal value of money. The standard of living to a large extent depends on the value of money.
3. Double counting: At times it is problematic differentiating capital goods from consumer ones, they are therefore counted twice which give false national income.
4. Determining what income is: Determining what is income to a person, what constitutes economic activities the rewards for some services like that of full-time house wives subsistence farmers, self-employed etc. constituting problems to national income measurement.
5. The problems created by the self employed. Many self-employed in our society do not keep proper book of account and therefore, it is very difficult to ascertain what their incomes, expenditures and outputs are.
6. Inflation and deflation: Inflation raises national income figure, while deflation reduces it. Problems here is how to arrive at accurate national income figure that is not affected by either inflation, or deflation
7. Determining Depreciation Value: - The inability of many business units and individuals ventures to calculate the depreciation of their machinery makes it difficult to ascertain the true

position of a country’s national income.

1. Insufficient Statistical data: It is extremely difficult to collect and assemble the required information for national income computation. In most cases, the information is just not available.
2. Ignorance and Illiteracy:- These factors make majority of the people in west Africa not willing to supply basis information that will be used for computation of national income
3. There are differences in the structure of production.

**DEFINITION OF SOME CONCEPTS**

***The standard of Living and Cost of Living***

* 1. **Standard of living**

This is the level of welfare attain by individuals in a country at a particular time . This level of welfare is measured in terms of the quantity and quality of goods and services consumed within a period of time. The average standard of living in the country is partly determined by the income per head via distribution of income.

* 1. **Cost of Living**

An individual cost of living refers to the total amount of money spent to obtain the goods and services which will enable him exist at a particular time. The cost of living depends on the prices of gods and services which an individual consumes.

* 1. **Price Index**

The price index is a number are figures used to show the average rises and fall of price in percentage terms with reference to a base period.

Index Number = Current year price X 100

 Base year price

**THEORY OF INCOME DETERMINATION**

**CIRCULAR FLOW OF INCOME**

Circular flow of income shows the independence or relationship between households and business enterprise

 Supply of Goods and Service

 Payment for goods and services

Drawing 1: Household Or personal Sector

Drawing 2: Firms Or Business Sector

 Wages, Interest, Rent and Profits

 Productive Services or Resources

Commodity and money flows between households and firms. It shows the flow of payments from business sector to households in exchange for labour and other productive services and the return flow of payments from households to business sector in exchange for goods and services.

The household or the personal sector offers its labour services to the business sector or firms in the production of goods and services. The household is rewarded in form of wages, interest and rent which it spends on the consumption of goods and services produced in the economy.

**FACTORS THAT BRINGS ABOUT CHANGES IN THE CIRCULAR FLOW OF INCOME**

1. **Withdrawal**: This part of all the income that is not all owed to pass through the normal channel of circular flow of income.

2. **Injection**: This forms an increase in the income of households, producers outside their normal processes of selling productive resources and manufactured goods.

3. **Savings**: These are part of income which are not consumed immediately and they reduce households and producers expenditures.

4. **Investment**: This reduces and creates additional income either immediately or in future.

5. **Gifts and grants**: They may come from governments to households and firms and help increasing their incomes

6. **Taxes**: They reduce the expenditures of households and firms on goods and factor services.

7. **Imports**: They involve expenditure on foreign made goods and services and constitute withdrawals from the circular flow of income.

8. **Export**: They Provide money from other countries and act as injection into the domestic circular flow of income.

**CONCEPTS OF SAVINGS, INVESTMENT AND CONSUMPTION**

**SAVINGS**

**Savings** are made up of disposable income which is not spent on consumer goods and services. Saving involves forgoing some present consumption.

**Individuals save for the following reasons:**

1. To raise capital

2. For unforeseen contingencies

3. For speculation

4. To acquire assets

5. For future purposes

6. To raise social status

**Factors that affect savings**

* + - * 1. The size of income
				2. The rate of interest
				3. Cultural attitude
				4. Government polices
				5. Availability of financial institutions.

**INVESTMENTS**

**Investment** may be defined as expenditure on physical assets which are not for immediate consumption but for production of consumer and capital goods and services.

**Types of Investment**

1. **Individual investment:** This may be on building, motor vehicles and other assets the individual hopes may increase his income and standard of living.

2. **Investment by firms:** This can be on buildings machines, furniture, raw materials, semi finished and finished goods.

3. **Government investment in social capital;** These are in the areas of roads, electricity, pipe borne water, hospitals schools.

Purpose: to improve the living condition of the citizen.

* 1. **Government investment in public corporations:** To render essential services create more employment opportunities among others, are sure of the reasons why government invest.

**Factors that determine investment**

1. The amount of income earned.

2. Savings

3. Profit

4. The amount paid as tax

5. The rate of interest

6. Expectation

7. Business atmosphere

8. Political factor

**CONSUMPTION**

**Consumption** is the sum of current expenditure on goods and services by individuals, firms and government. It is also mean part of income not saved or invested. The level of consumption of an individual depends largely on his level of current income.

**Factors that determine the level of consumption**

1. The level of income

2. Savings

3. Expectation of price changes

4. The rate of taxes paid

5. The influence of other households

6. Assets owned

7. The rate of interest received

8. Business profit

**The Relationship between Income, Consumption, Savings And Investment**

Income, consumption and savings are related. The amount of income earned (household) determines to a large extent the level of consumption of an individual as well as the amount which can be saved. This is represented by the formula. Y = C+S, where Y = Income, C = Consumption expenditure and S = Savings

Also, income, consumption and investment are related. The amount of income earned (business sector) determines to a large extent the level of spending on the running overhead cost (consumption) as well as the amount spent on further investment. This is represented by the formula: Y = C + I , where Y = Income , C = Consumption expenditure , I = Investment Expenditures

In forming an equation with household income and the business sector’s income, we have:

 C + S = C + I

 S = I

Consumption influences the level of national income. If people consume more, it encourages further production. Economy is at equilibrium when aggregate saving equals aggregate investment and full employment is achieved at this level. We save in order to accumulate capital for investment and for many other personal reasons. There will be no investment without saving. Investment, in turn, creates employment and income for people. Without income, we shall have nothing to save and nothing to spend on consumption of goods and services.

**EQUATION AND CALCULATION OF INCOME DETERMINATION**

**NATIONAL INCOME AND ITS CALCULATION**

In calculating the National Income for an open economy where import and export are involved (International Trade). A function such as:

Y = c + 1 + a + (x-m) could be used in arriving at the aggregate income in this function.

Y = The value of national income

C = Aggregate Investment expenditure (consumption)

I = Private Investment expenditure

X = Export expenditure

M = Import expenditure

Xn = Net exports (Xn >0)

**Example 1**

Below is information concerning the gross national product for a country in 1994 (in billions of naira) by sectors that buy the GNP.

 **Heading Amount**

Personal Consumption expenditures 637.3

Gross Private domestic investment 452.2

Government purchase of goods and services 105.3

Exports of goods and services 1001.

Imports 50.3

1. What method of national income is used for the above table?
2. Calculate the national income of the solution.

**Solution**

1. The method used is the expenditure method.
2. Since we are concerned with the expenditure method we have.

GNP = C + I + G + (x – m)

Substituting GNP = N637. 3 + N453.2 + N105.3 + (N100.1 – N50.3) = N1,245.66

**Example II**

The national income equation of a hypothetical country is expressed as:

Y = C + I + G

Where:

C = a + by

 N100m + 3/4Y

 I = N20m

 G = N40m

Where C, I and G are consumption, investment and government expenditure respectively. Calculate the equilibrium level of national income.

**Solution:**

Y = C + I + G

Y = a + by + I + G

Substituting into the equation above

Y = N100m + 3/4Y + N40m

Collecting like terms

(Y – 3/4Y) = 100 + 20m + N40

Factorise the RHS

Y(1 – ¾)

Y ( ¼ ) = N160m

Divide both sides by ¼

Y / ¼ 160

¼ = ¼

Y = 160 x 4/1 = N640m

**PROPENSITIES TO CONSUME**

**1. Average propensity to consume (APC)**

This is the ratio of consumption to income. Also, it is the fraction of the national income

consumed. That is,

 APC = Total National Consumption = C

 Total National Income Y

Algebraically

APC = 1 (as c = y)

C = Y X APC

APC >1 as C >Y

Y = C/APC

All things being equal, the average propensity to consume falls between zero and unitary.

**Example 1**

Calculate the average propensity to consume. If the national income is N20m and the total National Consumption is N15m

 **Solution**

APC = C/Y

Substituting into the formula above

APC = N15M

 N20m = 0.75

**Example II**

If the national income is N150m and the average propensity to consume is 0.2. Calculate the total national consumptions.

**Solution:**

Applying

C = Y x APC

 = N150m x 0.2

 = N30m

**2. Marginal Propensity To Consume (MPC)**

Marginal Propensity to Consume (MPC). This can be defined as the ration of the change in consumption to the change in income that necessitated it. That is,

MPC = Change in Consumption = ∆C

 Change in income ∆Y

 OR

MPC = ∆C (Infinitesimal Change) – A very Small Change

 ∆Y

O < MPC < 1

MPC falls between Zero and one

Algebraically

 ∆C = MPC x ∆Y and

 ∆Y = ∆C

 MPC

**Example 1**

If total national income increases from N1,500m to N1,800m and the total national consumption increases from N500m to N650m. What is the MPC.

**Solution:**

MPC = ∆C

 ∆Y

Substituting

MPC = (650 – 500)m

 1,800 – 1,500

MPC = N150m = 0.5

 N300

**Example 2**

Given that the total national income increases from N750m to N1000m and the MPC is 0.7, find the change in consumption.

**Solution.**

∆C = MPC x ∆Y

∆Y = N1000m – N750m

 = N250m

**Substituting**

∆C = 0.7 x N250m

 = N175m

**Example 3**

Determine the change in the total income if the change in the total national consumption is N300m and the MPC is 0.4.

**Solution**

Applying

∆Y = ∆C = N300m = N750m

 MPC 0.4

**PROPENSITIES TO SAVE**

**1. Average Propensity To Save (APS**)

This is defined as the ratio of savings to income. That is, the ratio of income saved (nationally) to the national income. It is denoted thus:

 AP = Total National Savings = S

 Total National Income Y

 O < APS < 1 (provided O < S < Y)

 APS = 1(as S = Y)

 APS = O (as S = O) Zero savings

 **Algebraically**

 S = APS x Y and

 Y = S

 APS

**Example 1**

If total national savings is N50m and the total national income is N500m, then the APS will be thus:

Solution:

Applying

APS = S

 Y

Substituting

APS = N50

 N500

APS = 0.1

**Example 2**

Calculate the total national income if the total national savings is 250m and the APS is 0.2.

**Solution:**

Applying

Y = S

 APS

**Substituting**

APS = N250

 0.2

APS = N1,250m

**2. Marginal Propensity To Save (MPS)**

This is defined as the ratio of the change is savings to the change in income that necessitated it. It is denoted thus:

MPS = Change in Savings ∆S

 Change in income ∆Y

OR

MPS = ∆S (infinitesimal change) - A very small change 0 < MPS < 1

MPS falls between zero and one

Algebraically,

∆S = MPC x ∆Y and ∆S

∆Y MPS

**Note**: MPS + MPC = 1

 MPS = 1 – MPC

**Example 1**

What is the MPS if the total national income increase from N375 to 450m and the total national savings increases from N85m to N100m

MPS = ∆S

 ∆Y

**Substituting**

MPS = (100 – 85)

 450 – 375

MPS = N15m = 0.2

 N75m

**Example II**

If the change in the total national income is N300 and the mps is 0.6, what will be the total national savings.

**Solution:**

∆S = MPS x ∆Y

 = 3000 x 0.6 = N180m

**Example III**

Given the change in the total national savings is N120mand the MPS is 0.3 calculate the total national income.

**Solution**

Applying

∆Y = ∆S

 MPS

 = N120m = N400m

 0.2

**Example IV**

Find the mps when the mpc is 0.6

**Solution**

mpc + mps = 1

therefore mps = mpc – 1

* + mps = 0.6 – 1
	+ mps = -0.4

mps = 0.4

**THE THEORY OF MULTIPLIER**

**DEFINITION OF MULTIPLIER**

The theory of multiplier states that an increase in consumer or business investment spending in a country would produce a multiplier effect by raising the level of national income. The multiplier effect can be as a result of changes in consumption expenditure, which is known as consumption multiplier or investment changes, which is known as investment multiplier.

The concept of multiplier shows that a small change in investment can have a magnified effect on income. Multiplier = 1 / (1-MPC) where MPC equals marginal propensity to consume.

Total increase in income depends on the marginal propensity to consume . If MPC is high , the

multiplier will be high and rise in income will be high when people spend on consumption , the level of national income rises.

Example:

Considering #100 million increase in investment , suppose 4/5 of the investment was consumed 1/5 would have been saved.

Increases in Income = Investment / 1- MPC

= 100m/ (1- 4/5 ) = 100m / (1/5)

= 100m x 5/1

= 500 million

The total increase in income is five times the initial increase in investment. Therefore, Multiplier is 5.

The multiplier denoted by K is usually calculated with the aid of formula

1. K = 1 = 1

 1 – mpc mps

 K = ∆Y

 ∆C

Where K = multiplier

Mpc = marginal propensity to consume

Mps = marginal propensity to save.

Y = change in national income

C = Consumption expenditure

I = Investment

**Example 1**

1. If the marginal propensity to consume is 0.8, calculate the multiplier.
2. By how much must consumption expenditure be increased to increase income by N10,000.

**Solution**

(a). K = 1 = 1 = 1 = 5

 1 – mpc 1 – 0.8 0.2

 The multiplier K has a value of 5

 (b) K = ∆Y

 ∆C

 5 = N10,000

 C

 Cross multiply

 5 x C = 10,000 x 1

 C = 10,000 = N2,000

 5

**EQUILIBRIUM LEVEL OF INCOME**

**Equilibrium Level of Income**- is a situation where the total amount people wish to save equals total investment of business units. It refers to a point at which the aggregate saving equals aggregate investments. At equilibrium level of income, there is a balance between or equality of saving and investment as illustrated in the diagram below:

Again, at equilibrium level of income, there is a balance between the aggregate demand and aggregate supply, and there will be no tendency to increase or decrease output. The business sector is satisfied that the right volume of output has been achieved and there will be no tendency to alter it.

For equilibrium national income to be maintained, the volume of total withdrawals from the circular flow of income must be equal to the volume of total injections. That is, total amount of saving must be equal to total value of investment, and aggregate expenditure must be equal to total output.

Income earners (household) can spend their income on consumption of goods and services or save it, hence, Y = C + S. On the other hand, the firms can spend its income on the running overhead expenses or invest it, hence, Y = C + I. Probing this equation further, we will arrive at a situation of, S = I, where the aggregate saving equals aggregate investment that indicates the general equilibrium level of income.

**NOTE**: For Y to be constant, the level of savings (S) must be equal to investment (I). By implication, the amount of consumption goods and services produced by firms will be equal to the aggregate demand of the people (household).