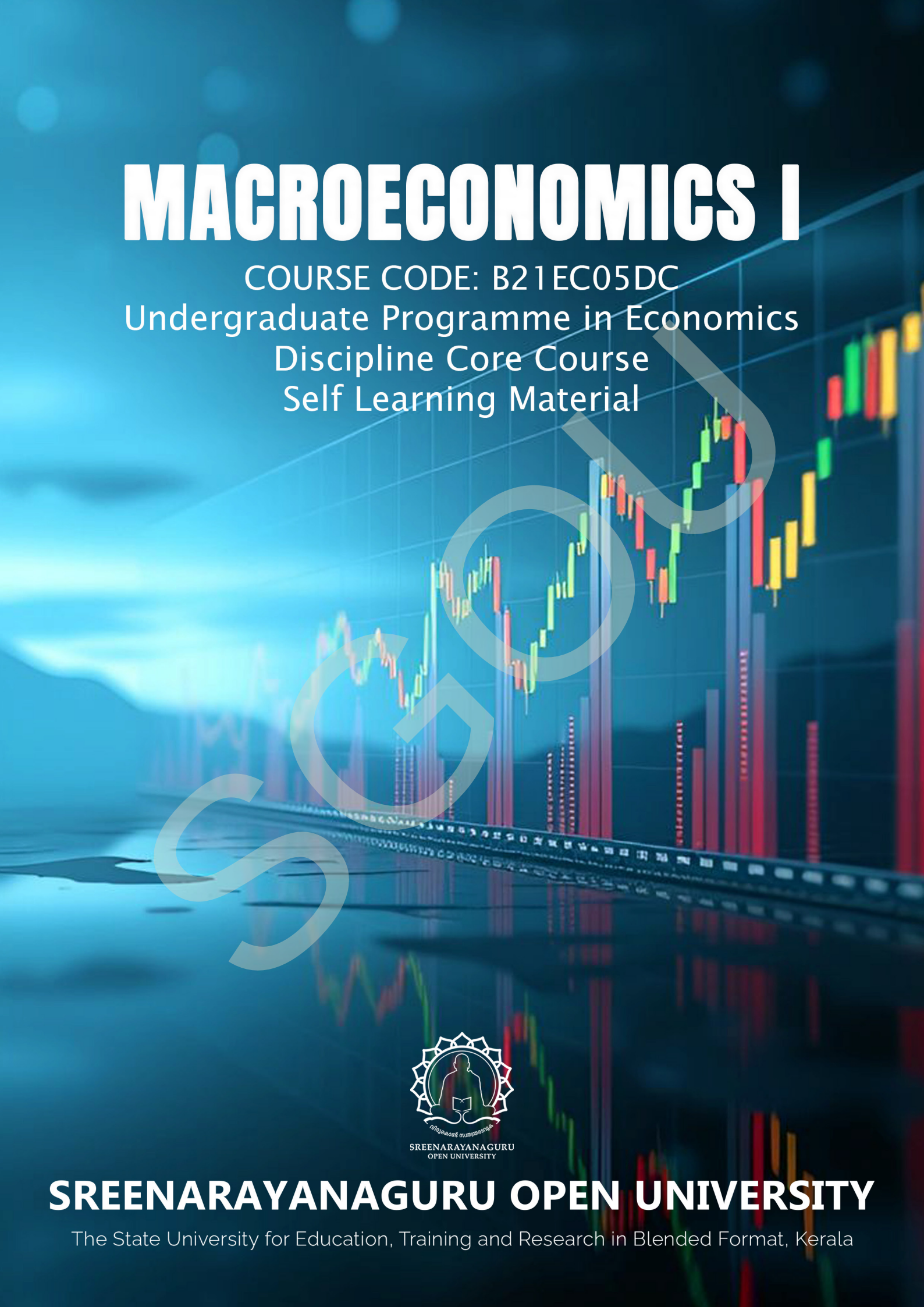
MACROECONOMICS I

COURSE CODE: B21EC05DC

Undergraduate Programme in Economics

Discipline Core Course

Self Learning Material



SREENARAYANAGURU OPEN UNIVERSITY

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The State University for Education, Training and Research in Blended Format, Kerala

SREENARAYANAGURU OPEN UNIVERSITY

Vision

To increase access of potential learners of all categories to higher education, research and training, and ensure equity through delivery of high quality processes and outcomes fostering inclusive educational empowerment for social advancement.

Mission

To be benchmarked as a model for conservation and dissemination of knowledge and skill on blended and virtual mode in education, training and research for normal, continuing, and adult learners.

Pathway

Access and Quality define Equity.

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Semester - V

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MESSAGE FROM VICE CHANCELLOR

Dear learner,

I extend my heartfelt greetings and profound enthusiasm as I warmly welcome you to Sreenarayanaguru Open University. Established in September 2020 as a state-led endeavour to promote higher education through open and distance learning modes, our institution was shaped by the guiding principle that access and quality are the cornerstones of equity. We have firmly resolved to uphold the highest standards of education, setting the benchmark and charting the course.

The courses offered by the Sreenarayanaguru Open University aim to strike a quality balance, ensuring students are equipped for both personal growth and professional excellence. The University embraces the widely acclaimed "blended format," a practical framework that harmoniously integrates Self-Learning Materials, Classroom Counseling, and Virtual modes, fostering a dynamic and enriching experience for both learners and instructors.

The university aims to offer you an engaging and thought-provoking educational journey. The undergraduate programme in Economics is designed to be on par with the high-quality academic programmes offered at state universities throughout the country. The curriculum incorporates the latest methodologies for presenting economic ideas and concepts. It stimulates students' interest in developing a deeper comprehension of the discipline. The curriculum encompasses both theoretical concepts and historical evidence. Suitable emphasis is placed on India's experiences with economic transformation. This would aid learners in preparing for competitive examinations, should they choose to take them. Upon successfully completing the programme, we anticipate that students will be well-equipped to handle key areas within the economics discipline. The Self-Learning Material has been meticulously crafted, incorporating relevant examples to facilitate better comprehension.

Rest assured, the university's student support services will be at your disposal throughout your academic journey, readily available to address any concerns or grievances you may encounter. We encourage you to reach out to us freely regarding any matter about your academic programme. It is our sincere wish that you achieve the utmost success.

Regards,
Dr. Jagathy Raj V.P.

01-06-2025

Contents

BLOCK

Basic Concepts in Macro Economics

UNIT

Understanding Macroeconomic Variables and Equilibrium Concepts

Learning Outcomes

After completing this unit, the learner will be able to:

- be aware of different macroeconomic variables
- distinguish between stock and flow variables
- understand partial and general equilibrium

Prerequisites

A new field of study in social sciences usually emerges when society faces a new set of questions to which it has no answer. Economics too emerged in the sixteenth century as a response to the new questions that nations faced as wealth and trade between countries saw an unprecedented rise. This is not to say that the questions about the economy never existed before. Discourses on the economy can be seen in the works of ancient Greek, Indian, Chinese, and Middle-Eastern philosophers. However, those discourses on the economy were restricted to how the administration of a kingdom could be managed.

During the late fifteenth century, Europe saw the beginning of sea explorations that led to a rise in the trade and wealth of nations. The next major change occurred with the beginning of the industrial revolution in Europe from the 1760s. This was the period of the growth of the idea of the free market. Adam Smith, a Scottish thinker and the father of Economics, was the most influential proponent of this idea. The idea basically argues that the voluntary exchange of goods and services between consumers and producers in a market fulfils individual interests with overall systemic efficiency and that there is no need for government intervention. This was a popular idea during the nineteenth and first quarter of the twentieth

century and was the basis of Classical economic thought and later Neo-Classical economic thought.

The free market argument was challenged by John Maynard Keynes when he found that the economic system was failing during the Great Depression of 1929. Keynes, who was himself a student of Classical Economics, believed in private initiative and capitalism. However, he also argued against the market's ability to allocate resources rationally and efficiently. He claimed that markets require guidance and intervention by the government. His ideas soon found many followers and helped in shaping government policies after the Great Depression.

The emergence of Keynesianism established economics as a different stream of thought. Soon, the different branches of economics emerged. One of them was macroeconomics, which was developed in order to study the complex system of interactions that take place between all the economic agents of an economy. Macroeconomics is the branch of economics that studies economic activities or economic problems at the level of an economy as a whole. In other words, macroeconomics studies the structure and performance of the economy as a whole and how an economy's behaviour can be influenced by certain policy measures.

Keywords

Gross Domestic Product, Inflation, Unemployment, Stock, Flow, General Equilibrium, Fiscal Policy, Monetary Policy

Discussion

1.1.1 Macroeconomic Variables

Why are some countries poor and others rich? Why is economic growth important for a country? Why cannot people find work? Why does the value of the Indian rupee change in the international market? How are crude oil prices fixed? These are some of the questions that may have crossed your mind as an economics student. Answers to these questions fall within the purview of macroeconomics.

To have a basic understanding of how an economy works, macroeconomists need to look at some specific data related to the total production in the economy, the overall price level, and how many people can be provided employment. Most countries in the world have, over the years, managed to measure these statistics on Gross Domestic Product (GDP), inflation, and unemployment with relative accuracy. These are macroeconomic variables.

1.1.1.1 Gross Domestic Product (GDP)

A wide range of goods and services are produced in an economy. Farmers produce wheat, rice, pulses, seeds, spices, and other food products. A manufacturing firm produces various types of goods like metal products, electronics, automobiles, clothes, petroleum, chemicals, plastic products, leather products, etc. The service sector provides services such as banking, telecommunication, tourism, and transport facilities. With such a diverse set of production taking place in an economy, it becomes important to determine the total value of the production. Therefore, all the goods and services produced across sectors are valued in terms of money. Hence, the monetary value of all the wheat produced will be added to the monetary value of all the machines produced, and so on.. This valuation helps in determining the overall performance of the economy and in understanding which sectors have the potential for growth in the ever-changing economic scenario. The money value of all the final goods and services calculated in this regard is called the Gross Domestic Product or GDP.

GDP measures the total value of goods and services produced within the geographic boundary of an economy during a specific time period. Economic growth refers to the increase in a country's Gross Domestic Product (GDP) over a specific period. Economic growth of an economy is always desirable, as it is expected that higher positive growth will lead to a better living standard for the people in the economy. In India, total output is divided into three sectors, namely agriculture and allied services, industry, and services.

The concept of per capita GDP, which is basically the total GDP divided by the total population of the country, will tell you how much income, on average, each resident of the country may get in a year. Suppose the GDP of a country is Rs.100 lakh crores and the total population is 100 crore; then the per capita GDP will be equal to Rs.1 lakh.

1.1.1.2 Inflation

You may have heard your parents say that in their younger days they could buy a month's worth of goods with Rs.500. Now, when you go to the market, you have to spend more than Rs.500 for a week's worth of goods. Why has that happened? This is because the prices of goods and services change over time. The increase in prices reduces your purchasing power. This general increase in the average price level of goods and services in the economy is called inflation.

A moderate level of inflation is often considered beneficial, as it can encourage producers to expand their output. A rise in the price of goods may also mean that workers will get higher wages. But what happens when there is a very high level of inflation? Usually, it is caused by some disruptions in the economy, like an economic crisis. Such a level of inflation would mean that consumers will not buy the goods and services, which will directly affect the revenue of the producers. And as revenue falls, wages may fall with it. So, it affects everyone in the economy negatively.

In India, inflation is measured using two indices, namely the Consumer Price Index (CPI) and the Wholesale Price Index (WPI). Policymakers try to keep the inflation rates in check through various policy tools available to them.

1.1.1.3 Unemployment

During the recent COVID-19 pandemic, you may have read reports that the unemployment rate in India in April 2020 hit a record 23.5%. It then stabilised over time and came down to 6% by the end of 2020. But when the second wave of COVID-19 hit India in 2021, the unemployment rate again rose to 14% by May 2021. What does this unemployment rate mean? How did a pandemic have such an impact on employment in India? What are the different reasons for a rise in unemployment? How does unemployment affect an economy? Let us try to answer these questions.

A person is called unemployed if she/he is willing and able to work but is unable to find work. Notice the words 'willing' and 'able' to work. Suppose you decide to pursue a Bachelor's degree at a university, which requires you to spend a lot of time in classes on campus. At the same time, in order to earn money, you may be willing to work. But you may not be able to work as you have to attend the classes. So, by definition, you are not an unemployed person.

On the contrary, you as an Open University learner may be able to work, as the Open University curriculum provides you with that flexibility. But you may decide not to take up any work and instead spend more time studying. Here you are able to work but you are not willing to work. So again, you are not unemployed.

Let us look at the definition more closely. There is a concept called the labour force. The total labour force of an economy is defined as the sum of the employed and the unemployed in the economy.

Labour Force = Number of employed + Number of unemployed

The unemployment rate in an economy is the percentage of the labour force that is unemployed.

Unemployment Rate = (Number of unemployed / Labour force) x 100

The unemployment rate is a good indicator of the condition of the job market. A high unemployment rate means that jobs are hard to find in the economy, whereas a low unemployment rate means that jobs are available in the economy and are easy to find. There are many types of unemployment in the economy. Some are given below.

a. **Structural Unemployment** – The introduction of robotics into the automotive industry meant that the work that was done by hundreds of automotive workers, like painters, polishers, and welders at a single firm, has been replaced by a few robots. The robots have more precision and help the companies in reducing the cost of production. But at the same time, the skilled workers who have been replaced by the robots have no place to go. Their skill set would not help them in finding work in other industries. So, in order to find work, they will have to spend time learning new skills. Since a structural change in the economy has led to unemployment, such unemployment is called structural unemployment. Such a change in the structure might make workers' present skill set obsolete.

b. **Disguised Unemployment** – In subsistence agriculture and traditional home-based industries, the whole family is involved in the production process. This leads to more labour than required in the production process. Suppose an acre of land produces 2 tonnes of wheat by employing 5 workers. Instead, 8 workers are working on it and are still producing only 2 tonnes of wheat. Now, let us assume that by selling 2 tonnes of wheat in the market, they earn Rs.8000. If the earnings are divided among the workers, then each of the 8 workers will get Rs.1000. But if it was just the 5 workers, then they could earn Rs.1600 each. The presence of 3 extra workers in the field is not leading to more production. At the same time, it makes each individual worker's earnings drop by Rs.600. This reduces efficiency and total earnings. The 3 workers could have instead utilised their labour by working somewhere else and earned more money. Therefore, if a sector employs more workers than is required to do a job, then it is called disguised unemployment.

c. **Seasonal Unemployment** – Certain sectors are functional only during a specific time of the year. When they are not functional, the workers working in the sector remain unemployed. This type of unemployment, due to its seasonal nature, is called seasonal unemployment. Seasonal unemployment is high in agriculture, tourism, construction, etc. Seasonal unemployment arises due to predictable fluctuations in employment across different times of the year, influenced by seasonal patterns. It typically affects jobs that are tied to specific seasons and operate only during certain periods.

   For example, fruit pickers are employed during harvest time, and tourism-related jobs become more active during holiday seasons. Once the season ends, the demand for labour drops, leaving many workers temporarily unemployed. Workers in these sectors often experience joblessness during the off-season when production slows or halts altogether. Consequently, employment opportunities in these fields are limited to a specific time of the year, and workers may face periods of unemployment during the rest of the year.

d. **Cyclical Unemployment** – During the COVID-19 pandemic, the nationwide lockdown forced many firms to shut down, leading to widespread job losses. The nationwide lockdown has meant that a lot of firms and sectors had to close down. The workers working in these sectors suddenly lost their jobs.

e. An economy goes through many ups and downs along its growth path. In some periods, the economy will witness high growth rates, and in others, the growth rate falls and creates a situation of recession in the economy. One major crisis of the 21st Century has been the economic crisis of 2008. Thus, the unemployment caused by the cyclical nature of economic growth in an economy is called cyclical unemployment.

f. **Frictional Unemployment** – When a person leaves a job, sometimes it takes them some time to find another job. This may be because other firms not immediately require a worker with the person's skill set, or the whole recruitment process requires a minimum amount of time. When people are unemployed during the transition between two jobs, it is called frictional unemployment. Frictional unemployment is considered natural and difficult

to eliminate entirely, as it results from normal labour market transitions. While not a primary policy concern compared to structural or cyclical unemployment, efforts such as improving job matching services and career guidance can help reduce it.

Unemployment, or the lack of employment opportunities, leads to widespread economic distress in the economy. For households of daily wage earners, household savings will be low. If they remain unemployed for an extended period, households may be forced to sell assets and use their savings to survive. "Various reports indicated that unemployment during the COVID-19 pandemic caused extreme hardship, with some households facing food insecurity."

We have now looked at the three key macroeconomic variables of an economy. An economy is considered good at macroeconomic management if it is able to keep inflation and unemployment levels down along with positive economic growth. Macroeconomic mismanagement can lead to severe consequences, both in the short and long run. Apart from the above-mentioned key variables, there are many other macroeconomic variables. These macroeconomic variables can be classified into stock and flow variables.

1.1.2 Stock and Flow Variables

Most economic variables are categorised as stock and flow variables. A stock variable is an economic variable that is measurable at a particular point in time. In other words, if you can assess the value of a variable at any point in time, then that variable is identified as a stock variable. Examples of stock variables include a person's wealth, capital, savings, the population of a country, and the money supply in the economy.

Flow variables are variables that can be measured over a specified period of time. This period may be in hours, days, weeks, months, years, etc. Some examples include monthly income, growth rate, saving, investment, personal consumption, budget deficits, etc.

Let us try to understand the concept of stock and flow variables with two variables that are often confused with each other, namely saving and savings. Saving is the amount of money that you save from your income after spending on consumption, whereas savings is the total money saved by you in a reserve account. Suppose you have a monthly income of Rs.35,000 and have Rs.10,000 in your Savings Bank Account. The amount that is in your Savings Bank Account is your total savings before you received this month's salary. Now let us assume that from your salary, you decided to save Rs.3,000 and deposit it into your savings bank account. So, the saving for the current month will be Rs.3,000, and your savings will now increase from Rs.10,000 to Rs.13,000. This means that saving is a flow variable and there is a time component attached to it, while savings is a stock variable.

1.1.3 Partial and General Equilibrium

In economics, equilibrium is a state at which the economic forces are in perfect

balance. In microeconomics, you would have learned that market equilibrium is a state in which the demand and supply of a commodity coincide at a particular price level. The equilibrium situation is usually divided into partial and general equilibrium. In the models that you learned in microeconomics, you were usually looking at equilibrium in one market. While reaching equilibrium in the market, many things were assumed to be constant. For example, while looking at consumer equilibrium, the prices of other commodities, tastes and preferences of the consumer, and income levels of the consumers are considered as given. Such an equilibrium, which is derived from a single market or by taking a particular part of the economy, is called partial equilibrium.Partial equilibrium analysis assumes that exogenous variables, those determined outside the system, remain constant during the analysis.

But macroeconomists have to assess the condition of the economy as a whole, and in doing so, they cannot look at each market in isolation. Instead, it requires studying how decision-making in one market might affect decision-making in other markets in the economy. For example, if the price of cement rises, then it will directly affect the construction sector. This will, in turn, affect the housing market as people might have to pay more to buy houses. This is why general equilibrium analysis is very important in macroeconomics. General equilibrium looks at the equilibrium in all the markets at the same time.

Recap

- Macroeconomics studies the economy as a whole
- Key macroeconomic variables include GDP, Inflation, and Unemployment
- GDP – total value of goods and services produced in an economy in a year
- Inflation – change in the general price level in an economy in a year
- Unemployment – when people are willing and able to work but cannot find work
- Types of unemployment – structural, disguised, seasonal, cyclical, and frictional
- A stock variable – a variable that can be measured at a particular point in time
- A flow variable – a variable that is measured during a specific period of time

- Equilibrium is when demand and supply are balanced at a certain price
- Partial equilibrium studies one market, assuming other factors stay constant
- General equilibrium looks at all markets and how they affect each other

Objective Questions

1. What is macroeconomics?
2. What are the three key economic variables?
3. What is GDP?
4. Define per capita GDP.
5. What is inflation?
6. Define labour force.
7. How is the unemployment rate calculated?
8. List different types of unemployment.
9. What are stock variables?

Answers

1. Branch of economics that studies economy as a whole
2. GDP, Inflation, Unemployment
3. Total value of goods and services produced in an economy in a year
4. Total GDP divided by the total population of the country

5. Change in general price level in an economy in a year
6. Sum of the employed and the unemployed in the economy
7. (Number of unemployed / Labour force) x 100
8. Structural unemployment, cyclical unemployment, seasonal unemployment, disguised unemployment
9. Variable that can be measured at a particular point in time

Assignments

1. Differentiate between stock and flow variables with suitable examples from macroeconomics.
2. Explain the concept of partial equilibrium and general equilibrium.
3. Explain macroeconomic variables.
4. Discuss the various types of unemployment.

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UNIT

Macro Statics, Models, and Economic Goals

Learning Outcomes

After completing this unit, the learner will be able to:

- understand macro statics
- comprehend macro models
- know macroeconomic goals

Prerequisites

Understanding how an economy functions requires more than observing day-to-day changes in prices, income, or employment. It involves examining the broader forces that shape these variables over time and across systems. This is the realm of macroeconomics, a field that looks at the economy as a whole, rather than individual markets. To make sense of such complexity, economists use structured approaches and tools. One of the foundational tools is macro static analysis, which captures a snapshot of the economy at a single point in time. Just like a photograph can reveal emotions in a moment without showing movement, static analysis helps us understand how the economy performs under specific, stable conditions. However, to understand how economies evolve, we turn to dynamic analysis, which tracks changes over time.

To analyse these scenarios more precisely, economists construct models, here macro models. These are simplified, yet powerful, representations of the real world that help us identify and examine the key relationships between variables such as income, consumption, inflation, and employment. By adjusting these models, we can simulate different policy impacts and economic events, making them essential for both theoretical understanding and practical policy-making. Alongside these methods, macroeconomics is also deeply concerned with identifying and achieving core macroeconomic goals.

Keywords

Macro Statics, Macro Models, Macroeconomic Goals

Discussion

1.2.1 Macro Static Analysis

In the previous unit, we learned about two types of equilibrium analysis depending on whether we study markets individually or study them as a whole while looking at the interactions between the markets. The subject matter of macroeconomics is analysed using two types of approaches, viz. static and dynamic.

The word 'static' means a state of rest. In macroeconomics, static analysis is used to capture the state of the economy at a particular point in time. Under this analysis, it is assumed that the size of the economy, level of output, price level, and employment level remain constant. Now, you may think that since economic activities are forever in motion, how will capturing one particular instant help in analysing the economy? The point to be noted here is that it does not imply a state of idleness but rather assumes that economic activity will follow a steady trend.

Think of it as capturing a photograph with your camera. If the photo was taken during a function where everyone was enjoying the celebration, then it does not mean that everyone just stood still in a particular pose during the function. The particular photo may show how happy each individual was at that particular point in time, and we assume that everyone enjoyed the whole function. This is similar to a static analysis.

Static analysis looks at the equilibrium positions in the economy. It is essential in macroeconomics as it helps in some basic generalisations, like how the economy is doing at a particular level of price and at a certain level of employment. But it cannot explain the process of change in the model, like what will happen if the price level rises or the employment level falls. It can only tell us whether there is disequilibrium in the model, what relationships among the variables are necessary for equilibrium, and in which direction each variable should move.

Comparative statics is just the comparative study of static equilibrium positions at different points in time. In other words, it compares the equilibrium positions with different levels of economic variables. Such analysis helps in planning in an economy as by comparing different equilibrium conditions at different points we can predict the growth path.

The mere understanding of the equilibrium conditions may not be enough to understand the interactions between various economic variables. It is equally important to understand what happens when the economy is not in equilibrium. How can we even know that the economy is on the path to reach equilibrium? Here is where dynamic

analysis is helpful. It studies the economy in which economic activities are forever in motion. Thus, it studies the various factors and forces which lead to changes in the equilibrium level. Dynamic analysis helps in finding not just how factors interact but also how much time it takes for one factor to affect the other.

1.2.2 Macro Models

Models are essentially abstractions of reality. The economy is highly complex in its original form, and in order to understand it, we need abstractions. Economic models help simplify these complex realities, thereby allowing us to observe and understand the economic issues. In other words, we try to take a complex real-world economic problem and pare it down to a simple model with only essential variables. These models will hence require a series of assumptions.

For example, when you read consumer theory, the law of demand was introduced as the first model. The model had only two variables: price and quantity demanded of a good. Does this mean that other variables do not affect the demand for a good? No. The model was simplified to understand the role of change in price on the quantity demanded of a good. A Latin phrase, *ceteris paribus*, meaning 'all other things being equal', was used in the model to assume that all other factors that affect the quantity demanded remain constant. In economics, you would have noticed that some assumptions were relaxed to better understand the complexities of reality.

Macroeconomics, which is even more complex than microeconomics, requires simple models that, in spite of all the assumptions, try to capture the essence of the real world. Macroeconomic models are thus simplified representations of the whole economy. These models help in determining the factors that affect the key macroeconomic variables, explaining and understanding the economic past of a country, and predicting the future growth path of the economy. Let us try to build a basic two-variable macroeconomic model now, the consumption model. Let us assume that only households consume in an economy, and they are able to consume based on their incomes. The consumption function will look like this:

$C = f(Y)$

where C is the total consumption in the economy and Y is the total income received by the households in the economy. Here, consumption is both a dependent and an endogenous variable, while income is an independent and exogenous variable. Does this mean that consumption is affected only by the level of income? No. A lot of variables can affect the level of consumption in an economy. These variables can be the rate of interest, expectations of the people, political stability of a country, economic conditions in the rest of the world, etc. But when we talk about consumption, we generally only mention the level of income. This simplification helps us in building a basic model and understanding how changes in the level of income affect consumption in an economy.

It is important to understand that there are macro models having more than one variable to represent the economy well. Macroeconomic models vary in complexity from basic logical frameworks to advanced, large-scale macro econometric models containing many equations that capture different economic relationships. These

models generally focus on key variables such as GDP, inflation, interest rates, and unemployment, often distinguishing between endogenous and exogenous factors. Their main purposes include understanding the past and present by analysing historical trends and economic data, forecasting the future by predicting economic conditions under various scenarios, and testing alternative futures by simulating the impact of different policies and events.

Note that within an economic model if the value of a variable depends on the change in the value of another variable or a set of variables, then it is called a dependent variable. Whereas if the value of a variable does not depend on the change in the value of another variable then it is called an independent variable. In the consumption model, consumption is the dependent variable and the level of income is taken as the independent variable.

An endogenous variable is a variable whose value depends on the other variables in the economic model. If the value of the endogenous variable changes, it is because the value of the independent variables has changed within the model. It is in a way similar to a dependent variable. An exogenous variable is the exact opposite of an endogenous variable. The value of an exogenous variable is determined outside the model. In other words, all the variables in an economic model whose values are determined outside the realm of the model are called exogenous variables.

In the consumption model explained above, consumption is an endogenous variable as its value is being determined within the model. Whereas, the level of income in an economy depends not just on the total consumption but also on the level of investment, government expenditure, and foreign trade. Since the level of income is defined outside the consumption model, it will be an exogenous variable.

1.2.3 Macroeconomic Goals

The government may set specific goals as part of its macroeconomic management. These goals may be for the short run or for the long run. Some of these goals are shared by all the countries across the globe.

a. **Economic Growth :** Economic growth is a primary macroeconomic objective for most governments. It refers to the increase in a country's production of goods and services over time. Economic growth or a rise in GDP is necessary for an economy. A rise in GDP may lead to better living conditions for the citizens. Economic growth will help a nation to invest highly in human development and help in reducing issues like poverty, malnutrition, illiteracy, etc. Many developed nations aim for an annual growth rate of 2–3%, which is considered sustainable and less likely to trigger demand-pull inflation. This rate of growth maintains economic stability while fostering development. It is often used by politicians as a measure of the success of their policies and governance. It has wide-ranging benefits and boosts consumer and business confidence, increases consumption and investment, creates employment opportunities, raises incomes, improves living standards, and strengthens government finances through higher tax revenues.

b. **Price Stability** : Price stability means the ability of an economy to reduce the chances of inflation and deflation for a prolonged period. The acceptable level of unemployment varies across countries, depending on economic structure and labour market dynamics. For instance, India's acceptable unemployment rate may differ from that of Japan. Maintaining a low and stable rate of inflation is critical to economic stability. Most economies target an inflation rate of around 2%, typically measured using the Consumer Price Index (CPI). A moderate inflation rate is often seen as a positive sign, reflecting a growing economy. However, when inflation becomes too high or too low, it can disrupt spending, saving, and investment behaviour. The causes of inflation vary: demand-pull inflation arises when overall demand exceeds supply, while cost-push inflation is driven by rising production costs. Governments use different tools to manage inflation, demand-side policies like raising interest rates that help reduce demand-pull inflation, whereas supply-side policies such as investing in productivity are used to control cost-push inflation.

c. **Low Unemployment** : Low unemployment is always desirable in an economy as it would mean that more people are able to find work. As more people work, it would lead to more income within a household. This will help in increasing consumption and therefore increase the overall output in the economy. A person is classified as unemployed if they are jobless but actively seeking work. The acceptable level of unemployment varies across countries, depending on economic structure and labour market dynamics. For instance, India's acceptable unemployment rate may differ from that of Japan.When an economy operates close to full employment, it indicates efficient utilisation of its labour force. Additionally, there is increasing focus on unemployment rates within specific demographic groups, such as youth and ethnic minorities.

d. **Balance of Payments Stability** : The balance of payments (BoP) is a record of all financial transactions between a country and the rest of the world. Stability in the balance of payments, particularly on the current account, is a major macroeconomic goal. The current account focuses on trade in goods and services. A trade deficit occurs when the value of a country's imports exceeds the value of a country's exports. A high trade deficit would mean that the country has to borrow money to meet the payment for goods and services imported from abroad. Governments aim for equilibrium in the current account to avoid long-term financial imbalances. A surplus occurs when exports exceed imports, while a deficit arises when imports are greater than exports. Both situations have pros and cons; however, a persistent current account deficit can be more damaging in the long run as it may increase dependency on foreign debt and affect exchange rate stability. Therefore, governments closely monitor and manage trade balances.

e. **Redistribution of Income** : Reducing income inequality is a vital macroeconomic and social objective. While perfect income equality is neither achievable nor desirable since it can remove incentives to work and innovate, extreme inequality can lead to unrest, reduced social mobility, and economic inefficiencies. Governments strive to redistribute income through progressive taxation and welfare policies that support lower-income groups.

Without regulation, capitalism tends to concentrate wealth in the hands of a few, allowing the rich to continually acquire productive assets. This leads to a narrowing of ownership and a widening income gap. In developing nations, absolute poverty is often more widespread and requires more direct intervention. Therefore, policy measures to ensure a fairer distribution of wealth are essential for maintaining social and economic stability.

Recap

- Static analysis shows the state of the economy at one point in time
- It assumes constant output, prices, and employment levels
- It helps understand economic equilibrium but not changes over time
- Comparative statics compares different equilibrium positions over time
- Dynamic analysis studies how the economy changes and moves toward equilibrium
- It explains how and when one variable affects another in real time
- Economic models simplify complex real-world problems
- Models use assumptions to focus on key variables only
- The consumption model shows how income affects spending
- Endogenous variables are explained within the model
- Exogenous variables come from outside the model
- Economic growth increases national income and improves living standards
- Price stability keeps inflation low and predictable
- Low unemployment means more jobs, income, and economic output
- Balance of payments stability ensures exports and imports are balanced
- Redistribution of income reduces inequality through taxes and welfare

Objective Questions

1. What is the focus of macro static analysis?
2. How does static analysis differ from dynamic analysis?
3. Why are economic models used in macroeconomics?
4. What is meant by the term ceteris paribus in economic models?
5. What is an endogenous variable in a macroeconomic model?
6. What does a consumption function typically relate in a simple macro model?
7. Name two key purposes of using macroeconomic models.
8. What does the term exogenous variable mean in the context of a macro model?
9. What are two common macroeconomic goals pursued by governments?

Answers

1. It focuses on capturing the state of the economy at a particular point in time
2. Static analysis looks at fixed conditions, while dynamic analysis studies how variables change over time
3. Economic models simplify complex real-world problems
4. Ceteris paribus means "all other things being equal,"
5. An endogenous variable is one whose value is determined by other variables within the model
6. A consumption function typically relates total consumption (C) to total income (Y)
7. Macroeconomic models help explain past trends and forecast future economic conditions

8. An exogenous variable is one whose value is determined outside the model

9. Economic growth and price stability are two common macroeconomic goals

Assignments

1. Explain the difference between macro static and dynamic analysis with relevant examples.

2. Define endogenous and exogenous variables. Illustrate their roles using a basic consumption model.

3. Discuss the role and importance of macroeconomic models in understanding and managing an economy.

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BLOCK

National Income

UNIT

Concepts and Measures of National Income

Learning Outcomes

After completing this unit, the learner will be able to:

- understand the basic concepts of national income and GDP
- differentiate between real and nominal GDP
- know the use of the GDP deflator in measuring price changes

Prerequisites

Have you ever thought about how we measure the total income of an entire country? How do we find out if the economy is doing well or not? When we hear terms like GDP, real income, or growth rate in the news, what do they actually mean?

Before we examine these important questions, it is useful to understand a few basic ideas. Every country produces goods and services like food, clothes, electricity, transport, and education. People earn money by taking part in this production, either through wages, profits, rent, or interest. The total value of all this production and income forms the core of what we call National Income.

This unit will explain how national income is measured using different methods and concepts like GDP, Real and Nominal GDP, and Gross Value Added. These concepts help us to understand the bigger picture of a nation's economic health and development.

Keywords

National Income, GDP, Real GDP, Nominal GDP, GDP Deflator, Gross Value Added

Discussion

2.1.1 National Income Concepts

National income accounting provides a systematic way to measure the economic activity of a country. The concepts below build on one another, moving from the broadest measures of production to the income that ultimately reaches households.

Gross Domestic Product (GDP)

There are two ways of looking at the Gross Domestic Product – by looking at the market value of goods and services or by looking at the factor prices of factors of production utilised in the manufacture of goods and services. So, it can be defined as:

i. GDP is the total market value of all the final goods and services produced within the geographic boundary of a nation within a specific period of time; or

ii. GDP is the sum total of all the factor payments made within the geographic boundary of a nation within a specific period of time.

GDP calculated at market prices is denoted as GDP_{MP} and GDP calculated at factor prices is denoted as GDP_{FC}. As all the factor payments made in the country are calculated, the incomes earned by foreigners in India will be included, while the incomes earned and remitted by non-resident Indians living abroad to India will be excluded.

Gross National Product (GNP)

Gross National Product is another important measure of national output. GNP too measures the market value of all the goods and services produced within a year. The important distinction is that it includes the incomes of non-resident nationals living abroad and excludes the income generated in the domestic territory of the nation that is accrued to the foreign nationals.

GNP = GDP + Factor income from abroad – Factor income to abroad

Net Domestic Product (NDP)

Production of goods requires fixed capital such as machinery. Every machine, after some time, goes through some level of wear and tear. This reduces the life of the machine in the long run. This loss in the value of the fixed capital like machines is called depreciation. When we deduct the depreciated value from the gross value of the capital, we get the net value. So NDP is the total value of final goods and services produced in an economy within a specific year, minus the depreciation.

$$NDP = GDP - Depreciation$$

Note that NDP at factor cost or NDP_{FC} is also called domestic income.

Net National Product (NNP)

NNP is calculated by deducting depreciation from GNP. We noted above that if we add 'net factor income from abroad' to the 'domestic' variable, we get the 'national' variable. Note that NNP, like others, can be calculated using factor costs and market prices. NNP_{FC}, which is the sum total of factor incomes (wages + rent + interest + profit) earned by normal residents of a country during a specific period of time, is also called the national income.

$$NNP_{FC} = NDP_{FC} + \text{Net factor income from abroad}$$

Per Capita Income (PCI)

As the name suggests it is a measure to capture what the per-person income in an economy will be. It is calculated by dividing the total income generated in the economy by the total population of a country. The concept can be extended to include both per capita domestic income and per capita national income.

$$\text{Per Capita Domestic Income} = \frac{NDP_{FC}}{Total\ Population}$$

$$\text{Per Capita National Income} = \frac{NNP_{FC}}{Total\ Population}$$

Internationally when we talk of per capita income we take the per capita national income as the standard measure.

Private Income

You may have guessed that private income would mean the income generated in the private sector of the economy. The Central Statistical Office (CSO) defines private income as 'the total of factor incomes from all sources and current transfers from the government and the rest of the world accruing to the private sector.'

Note that private income includes factor incomes as well as transfer income. The formula to find private income is

Private income = Factor income from Net Domestic Product accruing to the private sector + Net factor income from abroad + Interest in National Debt + Current Transfers from Government + Current Transfers from the rest of the world.

Personal Income

Personal income is the sum total of all incomes received by individuals or households from all the sources in the form of factor incomes and transfer incomes. A part of the private income received by the private sector is retained as corporate savings, and a part

is taxed by the government, which is called corporate taxes. If we deduct the corporate savings (also called undistributed profits) and corporate taxes from the private income, then we get the personal income.

Personal Disposable Income

Personal Disposable Income is the income remaining with individuals or households after the deduction of all the taxes levied against their income and property and the miscellaneous fees and fines levied by the government. Suppose your monthly household income is Rs.25,000 and the household has to pay Rs.2,000 in taxes. The household also had some fines, such as fines levied by the transport department that amounted to Rs.500. Then the personal income will be Rs.25,000 – Rs.2,000 – Rs.500 = Rs.22,500. This is the money that is left with the family to spend or save as per their wishes. So, in a way, the personal disposable income reflects the purchasing power of the households.

2.1.2 Real and Nominal GDP

When we want to measure the performance of an economy, one of the most important indicators we use is GDP. It tells us the total value of all final goods and services produced within a country during a given period, usually a year. However, there are two ways to express GDP—Nominal GDP and Real GDP.

Nominal GDP is the GDP measured at current market prices, which means the prices that are actually prevailing during the year the goods and services are produced. It reflects both the changes in the quantity of production and the price level. Therefore, if prices rise due to inflation, the nominal GDP will also rise even if actual production does not increase. This makes it difficult to judge whether the economy is truly growing or if the increase in GDP is just because of rising prices.For example, suppose the country produced the same amount of wheat in 2020 and 2021, but in 2021 the price of wheat increased. Then, nominal GDP will be higher in 2021, but this does not mean more wheat was produced.

To solve this problem, economists use Real GDP. Real GDP is the GDP measured at constant prices, that is, prices from a fixed base year. This allows us to remove the effect of inflation and focus only on the actual change in production over time. Real GDP shows us how much the economy is really growing in terms of quantity, not just price. So, while Nominal GDP can be misleading during times of high inflation, Real GDP gives a clearer picture of economic growth by adjusting for changes in the price level.

How do we calculate Real GDP? Let us try to look at it with an example. Let us assume that there are only three goods in the economy—bread, cloth, and bicycles. Let us further assume that 5,000 loaves of bread, 1,000 pieces of cloth, and 250 units of bicycles were produced in the financial year 2020-21 at Rs.25, Rs.300, and Rs.4,200 respectively. The prices for those goods in 2010-11 were Rs.20, Rs.250, and Rs.2,000. Now if we multiply quantities with the market price of each good in 2020-21, we get the current prices. This is illustrated in Table 2.1.2. Now, when we multiply the quantities produced of each good with the market prices in 2010-11 (base year), we get the constant prices.

Table 2.1.2 Estimation of Nominal and Real GDP

Final Goods	Quantities produced in 2020-21	Market price in base year (2010-11)	Market price in 2020-21	Value of final goods at 2020-21 prices	Value of final goods at 2010-11 (Base Year) prices
Bread	5,000	20	25	1,25,000	1,00,000
Cloth	1,000	250	300	3,00,000	2,50,000
Bicycle	250	2,000	4,200	10,50,000	5,00,000
Total				**14,75,000**	**8,50,000**

In the table given above, the nominal GDP is Rs. 14,75,000 and the real GDP is Rs. 8,50,000. See the difference? This difference is the result of inflation.

2.1.3 GDP at Current Prices and GDP at Constant Prices

To understand real and nominal GDP more clearly, we also need to understand the difference between GDP at current prices and GDP at constant prices.

GDP at current prices means the value of goods and services produced in a given year, calculated using the market prices of that same year. It shows the value of production as it is, including any increase or decrease in prices due to inflation or deflation. This is also called nominal GDP. Since current prices change every year, GDP at current prices will also be affected by these price changes. Therefore, it does not always reflect the true growth of the economy in terms of quantity.

GDP at constant prices, on the other hand, measures the value of goods and services using the prices from a base year (a fixed earlier year chosen for comparison). This type of GDP removes the effect of inflation and allows us to compare the level of output across different years more accurately. It is also called real GDP.

For example, if the base year is 2010–11, then GDP at constant prices for the year 2020–21 will be calculated using the prices that existed in 2010–11, even though the actual production happened in 2020–21. This makes it possible to see whether the economy produced more goods and services, regardless of price changes.

Thus,

GDP at current prices (nominal GDP) = Quantity × Current Year Prices

GDP at constant prices (real GDP) = Quantity × Base Year Prices

Using both measures together helps economists and policymakers understand whether GDP is increasing due to real growth in output or simply due to rising prices.

2.1.4 GDP Deflator

The GDP deflator or implicit price deflator measures the changes in prices for all the goods and services produced in an economy. It is calculated by dividing the nominal GDP by the real GDP.

$$\text{GDP deflator} = \frac{Nominal\ GDP}{Real\ GDP} \times 100$$

If we take the figures from the above example, from Table 2.1.2, the GDP deflator would be

$$\frac{Rs.\ 14{,}75{,}000}{Rs.\ 8{,}50{,}000} \times 100$$

This is equal to 174%. This means that inflation over a 10-year period from 2010-11 to 2020-21 was 174%.

The GDP deflator is considered to be a more comprehensive measure of inflation compared to the Consumer Price Index as it is not based on a fixed basket of goods.

2.1.5 GDP Gross Value Added (GVA)

Gross Value Added, or GVA, is a fundamental measure in economics that captures the true value generated by businesses and industries during production. Imagine a bakery that sells bread worth ₹1,00,000 in a year. To make this bread, the bakery spends ₹40,000 on flour, sugar, and other ingredients, along with ₹10,000 on electricity and fuel. The GVA of the bakery is calculated by subtracting these intermediate costs from its total revenue, which comes to ₹50,000. This ₹50,000 represents the fresh economic value the bakery has created through its production process. GVA can be measured in two ways, viz; gross (including wear and tear of machinery) and net (excluding depreciation). Net Value Added (NVA) is obtained by subtracting depreciation from GVA, giving a clearer picture of sustainable income. Since all sectors contribute to GVA, their combined total, after adjustments, helps determine a nation's GDP.

2.1.6 GDP at Factor Cost

GDP at Factor Cost focuses on the income earned by the factors of production; land, labour, capital, and entrepreneurship, without the influence of taxes and subsidies. Suppose a farmer grows wheat worth ₹1,00,000 and receives a ₹10,000 subsidy from the government. If there are no taxes, his contribution to GDP at Factor Cost is ₹1,00,000. However, if an excise tax of ₹5,000 is applied, the factor cost would adjust to ₹95,000. This measure is crucial because it directly links production to the actual earnings of workers, business owners, and investors, excluding distortions caused by government policies like taxes and subsidies. While GDP at Factor Cost is not commonly reported in headlines, economists use it to analyse real income distribution and economic efficiency.

2.1.7 GDP at Market Price

GDP at Market Price is the most widely recognised measure of economic activity because it reflects the actual prices consumers pay for goods and services, including taxes and excluding subsidies. For example, if a car manufacturer sells a vehicle for ₹10,00,000, which includes ₹1,50,000 as GST, the GDP at Market Price counts the full ₹10,00,000. However, GDP at Factor Cost would only consider ₹8,50,000 (excluding the tax). The relationship between GVA and GDP at Market Price is simple; i.e., GDP (Market Price) = GVA (Basic Price) + (Indirect Taxes – Subsidies).

If a country's total GVA is ₹500 trillion, indirect taxes amount to ₹50 trillion, and subsidies are ₹10 trillion, then GDP at Market Price becomes ₹540 trillion. This figure is what governments and media report because it represents the total spending in the economy. Additionally, subtracting depreciation from GDP at Market Price gives Net Domestic Product (NDP), which indicates how much income remains after accounting for the wear and tear of machinery and infrastructure.

Importance of These Measures

Understanding GVA, GDP at Factor Cost, and GDP at Market Price provides a complete picture of an economy's health. GVA shows the real production strength of different sectors, GDP at Factor Cost reveals how income is distributed among workers and businesses, and GDP at Market Price reflects the actual expenditure by consumers. Policymakers use these measures to design better tax policies, allocate subsidies efficiently, and plan investments for long-term growth. By analysing all three, economists can distinguish between growth driven by real production and changes caused by tax policies or depreciation, ensuring informed decisions for sustainable economic development.

At the heart of economic measurement lies Gross Value Added (GVA), which reveals how much value businesses truly create. Imagine a smartphone factory selling devices worth ₹10 crore. To make these, it spends ₹6 crore on chips, glass, and other components. The factory's GVA is simply:

GVA = Output Value - Intermediate Inputs

₹4 crore = ₹10 crore - ₹6 crore

This ₹4 crore represents the factory's genuine economic contribution. We calculate this for all sectors to get national GVA. However, assets like machines lose value over time (depreciation). Accounting for this gives us:

Net Value Added = GVA - Depreciation

If depreciation is ₹0.5 crore, then NVA = ₹4 crore - ₹0.5 crore = ₹3.5 crore

When converting GVA to GDP, we must consider the government's role in pricing. Producers receive one price (factor cost), while consumers pay another (market price). The difference comes from taxes and subsidies.

GDP (Market Price) = GVA (Basic Price) + (Taxes - Subsidies)

For example, if national GVA is ₹100 trillion with ₹12 trillion in taxes and ₹2 trillion in subsidies;

GDP = ₹100 trillion + (₹12 - ₹2) trillion = ₹110 trillion

Alternatively, we can calculate GDP at what producers actually receive.

GDP (Factor Cost) = GDP (Market Price) - Net Indirect Taxes

= ₹110 trillion - ₹10 trillion = ₹100 trillion

These equations are not just academic - they serve different purposes. Market price GDP (₹110 trillion) tells us what consumers actually spend. Factor cost GDP (₹100 trillion) shows what producers really earn. GVA (₹100 trillion) reveals where value is created across sectors. When depreciation (say ₹15 trillion) is removed, we get Net Domestic Product:

NDP = GDP - Depreciation

₹95 trillion = ₹110 trillion - ₹15 trillion

This shows the economy's sustainable output after maintaining capital. Policymakers use these measures differently; GVA for sectoral analysis, market price GDP for demand assessment, and NDP for long-term capacity evaluation. The equations connect these perspectives, allowing us to see the complete economic picture from production to consumption.

Table 2.1.2 National Income Aggregates

GDP_{MP}	It is the market value of all the goods and services produced within the geographic territory of a country during a specific period
GNP_{MP}	GDP_{MP} + Net Factor Income from Abroad
NNP_{MP}	GNP_{MP} - Depreciation (or Consumption of fixed capital)
NDP_{MP}	NNP_{MP} - Net Factor Income from Abroad
NDP_{FC}	NDP_{MP} - Indirect Taxes + Subsidies
GDP_{FC}	NDP_{FC} + Depreciation
GNP_{FC}	GDP_{FC} + Net Factor Income from Abroad
NNP_{FC}	GNP_{FC} – Depreciation
Per Capita Income	NNP_{FC} ÷ Total population of the nation
Private Income	Factor income from Net Domestic Product accruing to private sector+ Net factor income from abroad + Interest in National Debt + Current Transfers from Government + Current Transfers from rest of the world
Personal Income	Private Income – Corporate savings – Corporate taxes

Personal Disposable Income	Personal Income – Direct personal taxes – Miscellaneous fees and fines levied by the government

The above table presents the various national income aggregates used to measure a country's economic performance. It shows how different forms of income such as GDP, GNP, and NNP are calculated by adjusting for factors like depreciation, taxes, subsidies, and foreign income. It also explains how we derive individual-level indicators like per capita income, private income, personal income, and personal disposable income from broader national figures.

Recap

- GDP is the money value of final goods and services produced domestically
- GNP includes net factor income from abroad in GDP to reflect total national production
- NDP accounts for depreciation by subtracting it from GDP
- NNP deducts depreciation from GNP to represent net national output
- Real GDP is GDP at constant prices and removes the effect of inflation
- Nominal GDP is GDP at current prices and includes the impact of price changes
- GDP Deflator is the ratio of nominal to real GDP, indicating price level changes
- GVA is the net contribution of each sector to output after deducting intermediate consumption
- GDP at factor cost excludes net indirect taxes from GDP at market price
- GDP at market price includes taxes and excludes subsidies over GDPFC
- Per Capita Income measures national income per individual
- Private Income includes factor income and transfer income accrued to the private sector
- Personal Income is private income less corporate tax and savings
- Personal Disposable Income is personal income minus direct taxes and government levies

Objective Questions

1. What is the difference between Real GDP and Nominal GDP?
2. How is GDP at Factor Cost calculated?
3. What does the GDP deflator measure?
4. Define Gross Value Added (GVA).
5. Why is GDP at Market Price higher than GDP at Factor Cost?
6. What is the formula for the GDP deflator?
7. How does depreciation affect Net Domestic Product (NDP)?
8. What is included in Operating Surplus?
9. How is Per Capita Income calculated?
10. What is the key limitation of Nominal GDP?
11. What distinguishes GDP from GNP?
12. Name one item excluded from national income calculations.

Answers

1. Real GDP adjusts for inflation (constant prices), while Nominal GDP uses current prices
2. GDP at Factor Cost = GDP at Market Price – Net Indirect Taxes
3. Price changes in all domestically produced goods/services
4. GVA = Output value – Intermediate consumption
5. It includes indirect taxes and excludes subsidies
6. $\frac{Nominal\ GDP}{Real\ GDP} \times 100$
7. NDP = GDP – Depreciation
8. Rent, interest, profit, dividends, and royalties

9. National Income (NNP_{FC}) ÷ Total Population
10. It does not account for inflation, misleading growth interpretation
11. GNP includes net income from abroad; GDP is domestic-only
12. Transfer payments

Assignments

1. Calculate GDP at Market Price if Private Consumption = ₹500cr, Government Spending = ₹200cr, Investments = ₹300cr, Exports = ₹100cr, Imports = ₹150cr.
2. Explain with an example how Real GDP eliminates inflation effects.
3. Compute GVA for a sector with Output = ₹1,200cr and Intermediate Consumption = ₹700cr.
4. Distinguish between GDP at market price and GDP at factor cost using examples.
5. Analyse why illegal activities are excluded from national income.

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UNIT 2

Methods and Challenges of National Income Estimation

Learning Outcomes

After completing this unit, the learner will be able to:

- understand the methods of national income calculation
- identify key challenges in national income measurement
- differentiate between the three estimation approaches

Prerequisites

Before examining the methods of estimating national income, it is important to understand why this topic matters and what basic ideas we need to keep in mind. How would you calculate the total income of an entire country? Imagine every rupee earned by farmers, factory workers, CEOs, and street vendors; every purchase made from groceries to skyscrapers; all the goods produced from crops to smartphones. Now consider this; some people work without official records, many businesses operate in cash, and new digital services pop up daily. How can economists possibly capture all this activity accurately? The truth is, measuring national income is like solving a giant puzzle where some pieces are missing, others overlap, and the picture keeps changing. This complexity is exactly why we need systematic methods—the income, expenditure and factor approaches, each offering a different perspective to view the same economic picture. But here is the catch: no single method is perfect, and understanding their limitations is just as crucial as learning the techniques themselves.

Keywords

National Income, Income Method, Expenditure Method, Factor Cost, Value Added, Mixed Income

Discussion

2.2.1 Methods of National Income Estimation

The economic activities of a nation revolve around three fundamental processes, production, income generation, and expenditure. When goods and services are produced, they generate incomes for various factors of production like labour (wages), capital (interest), land (rent), and entrepreneurship (profits). These incomes are then spent on purchasing goods and services, completing the circular flow of income in an economy. Since national income represents the total value of all economic activities, it can be measured through three complementary approaches.

Factor Method/Production Method (Value Added Approach): Calculates national income by summing up the net value added by all producing units across different sectors, avoiding double counting of intermediate goods.

Income Method: Estimates national income by aggregating all factor incomes (wages, rent, interest, profit) earned within the economy during a given period.

Expenditure Method: Measures national income as the total final expenditure on goods and services, including consumption, investment, government spending, and net exports.

2.2.2 Factor Method/Product or Value Added Method

Under this method, the economy is divided into three sectors: a) Primary sector, which includes agriculture and allied services b) Secondary sector, which includes manufacturing and construction and c) Tertiary sector, which includes all types of service activities.

The primary sector of an economy is the sector that is concerned with the production and or extraction of natural resources like agriculture, forestry, fisheries, and mining, etc. The secondary sector is concerned with transforming natural resources into products or goods. For example, heavy manufacturing, food processing industry, energy production, construction activities, etc. The tertiary sector in an economy is also called the service sector. This sector produces services instead of products. This is an important sector and has seen remarkable growth in the past few decades. Some of the important activities in the tertiary sector include banking, tourism, Information Technology (IT), transport, restaurants, etc.

Each sector will have different producing units, which we call firms or enterprises. Value added is the difference between the value of output that each firm in each sector produces and the value of its intermediate consumption. Here, the value of output is the market value of all the goods and services that are produced by each firm within each sector during an accounting year. Intermediate consumption is the value of the goods and services consumed as inputs during the production process, excluding fixed capital.

The value of intermediate consumption is the value of non-factor inputs, i.e., all the inputs except the factor inputs like land, labour, capital, and entrepreneurship. It mainly includes the raw materials used for production.

Value Added = Value of Output – Value of Intermediate Consumption

Each enterprise may sell all the goods and services that it produces or keep a portion of the produce as inventory stock. This inventory will either accumulate because there was not enough demand for all the produced goods and services or because the firm wants to keep a buffer expecting higher future sales. Importantly, in national income accounting, such unsold inventory is still counted as part of the nation's output through the concept of 'change in stocks'. This ensures that all production is captured in the national income estimates, whether sold or held in inventory, maintaining the fundamental identity between production, income, and expenditure in the economy.

Value of Output = Sales + Change in Stock

Change in stock is the difference between the 'closing stock' and the 'opening stock' during an accounting year. In India, the accounting year or the financial year starts on 1st April each year and ends on 31st March the following year. Suppose a firm's opening balance on 1 April 2021 is Rs.30 crore and the closing balance on 31 March 2022 is Rs.20 crore. Then the change in stock will be Rs.20 crore minus Rs.30 crore, i.e., negative Rs.10 crore.

Let us try to understand it with an example. Table 2.2.1 below shows how the gross value added is calculated. The value of output and value of intermediate consumption of each sector is given in Column 2 and Column 3. Value added in the agriculture sector is Rs.1,000 – Rs.300 = Rs.700. Value added in the industry is Rs.800 – Rs.600 = Rs.200. Value added in services is Rs.1,400 – Rs.1,000 = Rs.400. Total value added of all the sectors is Rs.700 + Rs.200 + Rs.400 = Rs.1,300.

Table 2.2.1 Estimation of Value Added

Sectors	Value of Output (Rs.)	Intermediate Consumption (Rs.)	Value added (Rs.)
Agriculture	1000	300	700
Industry	800	600	200
Services	1400	1000	400
Total	**3200**	**1900**	**1300**

Things to remember when calculating national income using the Value-added Method

- The value of the sale and purchase of second-hand goods is not included in value added.
- Commissions earned on the sale and purchase of second-hand goods are included in the value added.

- The value of intermediate goods is not included in the estimation of value added.
- Own account production is taken into account while estimating value added.
- Imputed value of production for self-consumption is taken into account.
- Imputed rent on owner-occupied property is also taken into account.
- Services for self-consumption are not considered while estimating value added.

Let us look at a few illustrations

Illustration 1: Suppose there are only two firms (A and B) in an economy, find out

i. Value added by firm A

ii. Value added by firm B

iii. Gross value added at market price

iv. Gross value added at factor cost

Items	(in Rs. crore)
Sales by Firm A	200
Purchases of Firm A from Firm B	40
Sales by Firm B	300
Purchases of Firm B from Firm A	75
Closing stock of Firm A	30
Closing stock Firm B	60
Opening stock of Firm A	50
Opening stock of Firm B	65
Indirect taxes paid by both A and B	55

Solution

(i) Value Added by Firm A

= Sales + (Closing Stock - Opening Stock) - Intermediate Consumption

= ₹200 cr + (₹30 cr - ₹50 cr) - ₹40 cr

= ₹200 cr - ₹20 cr - ₹40 cr

= ₹140 crore

(ii) Value Added by Firm B

= Sales + (Closing Stock - Opening Stock) - Intermediate Consumption

= ₹300 cr + (₹60 cr - ₹65 cr) - ₹75 cr

= ₹300 cr - ₹5 cr - ₹75 cr

= ₹220 crore

(iii) Gross Value Added at Market Price (GVA_{MP})

= Value Added by A + Value Added by B

= ₹140 cr + ₹220 cr

= ₹360 crore

(iv) Gross Value Added at Factor Cost (GVA_{FC})

= GVAMP - Indirect Taxes

= ₹360 cr - ₹55 cr

= ₹305 crore

Illustration 2: Suppose the economy has only two firms – A and B. From the data given below, calculate (i) Value added by Firm A, (ii) Value added by Firm B, (iii) Gross Value Added

Items	(In Rs. lakhs)
Sales to households by Firm A	70
Sales to Firm B by Firm A	32
Sales to households by Firm B	65
Sales to Firm A by Firm B	27
Exports by Firm B	17
Imports by Firm B	08

Solution

(i) Value Added by Firm A

= Total Sales by Firm A - Purchases by Firm A from Firm B

= (Sales to households + Sales to Firm B) - Purchases from Firm B

= (₹70 lakhs + ₹32 lakhs) - ₹27 lakhs

= ₹102 lakhs - ₹27 lakhs

= ₹75 lakhs

(ii) Value Added by Firm B

= Total Sales by Firm B - Purchases by Firm B from Firm A - Imports

= (Sales to households + Sales to Firm A + Exports) - Purchases from Firm A - Imports

= (₹65 lakhs + ₹27 lakhs + ₹17 lakhs) - ₹32 lakhs - ₹8 lakhs

= ₹109 lakhs - ₹32 lakhs - ₹8 lakhs

= ₹69 lakhs

(iii) Gross Value Added (GVA) for the Economy

= Value Added by Firm A + Value Added by Firm B

= ₹75 lakhs + ₹69 lakhs

= ₹144 lakhs

2.2.3 Income Method

Under this method, the national income is measured in terms of factor payments made in the form of wages, rent, interest, and profit. Hence, this method is also called the factor payment method. According to this method, the national income is estimated as the sum total of factor incomes earned by the normal residents of a country during an accounting year. Factor incomes include the following:

a. **Compensation of Employees:** It includes (a) gross wages and salaries payable in cash, (b) payment in kind, (c) employee bonuses, (d) health insurance, (e) employers' contribution to the social security scheme, (f) pension on retirement, etc.

b. **Operating Surplus :** It includes income from property and entrepreneurship. It is earned in both private and public enterprises. It includes (a) rent, (b) interest, (c) dividends, (d) profit, (e) royalty, (f) undistributed profits, etc.

c. **Mixed Income :** Mixed income refers to the income generated by a self-employed person using their own labour, land, capital, and entrepreneurship. Since the incomes are mixed in terms of wages, rents, interest, and profit, it is called mixed income.

NDP_{FC} = Compensation of Employees + Operating Surplus + Mixed Income

NNP_{FC} = NDP_{FC} + Net Factor Income from Abroad

Things To Remember When Calculating National Income Using the Income Method

- Transfer earnings like scholarships, unemployment allowances, old age pensions, etc. should not be included in the national income. This is because transfer earnings do not lead to any additions in the economy.
- Retirement pensions are part of an employee's work contract. Hence, they should be included in the compensation of employees.
- Earnings from the sale of second-hand goods are not included in the national income because the value of those goods was already included during the initial sale.
- Earnings from the sale of stocks and bonds are not included as those are not related to the flow of goods and services.

- Windfall gains, like winning a lottery, are not included in the national income as there are no corresponding value additions.

- Incomes from illegal activities like theft, gambling, smuggling, etc. are not included in the national income.

- Imputed rent, or in other words, the rent that the owner of a house is willing to pay to live in his or her house, is included in the national income. This is because the house does have a rental value whether the owner lives there or rents it out to a tenant.

- Similarly, the imputed value of production of goods for self-consumption is also part of national income. For example, suppose a farmer produces paddy and keeps a certain proportion for his or her family's consumption before selling the rest in the market. This means that the proportion that he/she kept for the family could also be sold in the market for a price but did not. Hence, that value is also added to the national income.

Look at the two illustrations below to have a better understanding of how it is calculated.

Illustration 1: With the information in the given table, calculate (i) NDP_{FC} (ii) GDP_{FC} (iii) NNP_{FC} and (iv) NNP_{MP}

Items	(in Rs. crore)
Operating Surplus	20,000
Mixed income of self-employed	40,000
Compensation of Employees	30,000
Indirect Taxes	5,000
Subsidies	2,000
Depreciation	1,000
Net Factor Income from Abroad	500

Solution

i) NDP_{FC} = Compensation of Employees + Operating Surplus + Mixed income of self-employed

= Rs.30,000 crore + Rs.20,000 crore + Rs.40,000 crore

= Rs.90,000 crore

(ii) $GDP_{FC} = NDP_{FC}$ + Depreciation

= Rs.90,000 crore + Rs.1,000 crore

= Rs.91,000 crore

(iii) NNP_{FC} = NDP_{FC} + Net Factor Income from Abroad

= Rs.90,000 crore + Rs.500 crore

= Rs.90,500 crore

(iv) NNP_{MP} = NNP_{FC} + Indirect Taxes – Subsidies

= Rs.90,500 crore + Rs.5,000 crore – Rs.2,000 crore

= Rs.93,500 crore

Illustration 2: Based on the following information find (i) Domestic income, and (ii) National income.

Items	(in Rs. crores)
Wages	8,400
Rent	2,700
Interest	630
Dividend	4,100
Mixed income	500
Undistributed profit	260
Social security contribution	440
Corporate profit tax	225
Net factor income from abroad	1,800

Solution

i. Domestic income or NDPFC = Wages + Social security contribution + Rent + Interest + Dividend + Undistributed profits + Corporate profit tax + Mixed income

= Rs.8,400 crore + Rs.440 crore + Rs.2,700 crore + Rs.630 crore + Rs.4,100 crore + Rs.260 crore + Rs.225 crore + Rs.500 crore

= Rs.17,255 crore

The domestic income is Rs.17,255 crore. Note that dividend, undistributed profits, and corporate profit taxes are part of total profits. Wages and social security contribution are part of compensation of employees. Rent and interest are part of the operating surplus.

ii. National income or NNP_{FC} = NDP_{FC} + Net factor income from abroad

= Rs.17,255 crore + Rs.1,800 crore

= Rs.19,055 crore

The National Income is Rs.19,055 crore

2.2.4 Expenditure Method

The expenditure method measures expenditures on the final goods and services at market price during an accounting year. One thing to note here is that the expenditure on intermediate goods is not included in the calculation. So goods purchased by a firm from another firm for resale or as raw material is not included. The expenditure method is also called 'Income Disposal Method'. Final expenditure can be classified as follows.

a. **Private Final Consumption Expenditure**: It refers to the expenditure on final goods and services by households and non-profit private institutions.

b. **Government Final Consumption Expenditure**: Like the household sector, the government sector too has to rely on the business sector to buy the necessary goods and services. A government office would require basic furniture, computers, electronic goods, etc., for daily functioning, which the government purchases from the business sector. Government final consumption expenditure refers to expenditure on final goods and services by the government.

c. **Investment Expenditure**: It refers to the expenditure on the purchase of final goods and services by the producers. These expenditures are of two kinds – fixed investment (which is the investment on the purchase of fixed assets) and inventory investment (which is simply the change in the stock). Investment expenditure is also called expenditure on gross capital formation, as investment implies adding to the stock of capital. Fixed investment is further classified as (i) business fixed investment, (ii) fixed investment by households – for example, the construction of houses, and (iii) fixed investment by the government – like expenditure on dams, highways, and flyovers. Inventory investment refers to the change in stock during a year. It is estimated as a difference between the closing stock and the opening stock.

d. **Net Exports**: It refers to the difference between the total exports of goods and services and the total imports of goods and services of a country during an accounting year. The sum total of the expenditure on goods and services produced domestically during an accounting year is called Gross Domestic Product at Market Prices (GDP_{MP}).

GDP_{MP} = Private final consumption expenditure + Government final consumption expenditure + Investment expenditure + Net exports.

Things to Remember When Calculating National Income Using Expenditure Method

Expenditure on only final goods and services is to be included. For example, if a bakery is producing bread, then the expenditure to buy bread by the consumers will be added to the national income. But the expenditure made by the bakers to buy raw

materials like wheat, sugar, milk, etc. will not be added. This is because the final price of the bread will include the cost incurred by the baker on those inputs. In other words, the value of intermediate expenditure is not included in the calculation. This is because it is already reflected in the final expenditure.

Expenditure on second-hand goods is not included because the expenditure on those goods was already included when they were bought the first time.

Expenditure by the government on transfer payments like scholarships, old-age pensions, etc. is not included as there is no value addition in the economy.

Let us look at an illustration.

Illustration 1: From the data given in the table, calculate (i) GDP_{MP} (ii) GDP_{FC} (iii) NDP_{FC} and (iv) NNP_{FC}

Item	(in Rs. crore)
Gross Investment	900
Net Exports	350
Net Indirect Taxes	70
Depreciation	115
Net Factor income from Abroad	- 90
Private Consumption Expenditure	1,100
Government purchases of goods and services	255

Solution

i. GDP_{MP} = Private consumption expenditure + Government consumption expenditure + Gross investment + Net exports

= Rs.1,100 crore + Rs.255 crore + Rs.900 crore + Rs.350 crore

= Rs.2,605 crore

ii. $GDP_{FC} = GDP_{MP}$ - Net Indirect Taxes

= Rs.2,605 crore – Rs.70 crore

= Rs.2,535 crore

iii. $NDP_{FC} = GDP_{FC}$ – Depreciation

= Rs.2,535 crore – Rs.115 crore

= Rs.2,420 crore

iv. $NNP_{FC} = NDP_{FC}$ + Net factor income from abroad

= Rs.2,420 crore + (- Rs.90 crore)

= Rs.2,330 crore

2.2.5 Difficulties in The National Income Measurement

National income accounting has certain limitations. Some of the important ones include the following.

a. The national income calculation is for the transactions that take place through government-sanctioned channels. But what about the transactions that take place outside those channels? Such transactions, which are called non-market or black market transactions, occur when firms or households try to evade the taxes or price controls set by the government. Such transactions are almost impossible to capture and hence are not part of national income accounting.

b. Sometimes the health or well-being of an economy is assumed to be equivalent to the country's overall income level. This is a little misleading as national income or per capita income is unable to identify the income inequality that is present in the economy.

c. Housework is not included in national income accounting. Most economists agree that housework, which is predominantly done by women, needs to be accounted for in national income calculations. One major barrier has been how to calculate it. The data relating to the number of people engaged in housework is also unavailable.

d. The economic activities in an economy lead to various externalities. An externality means the cost or benefit incurred to an individual/household/firm even when they were not part of the economic activity. For example, an industrial firm may be using crude oil for the production of goods in their factory, which leads to pollution. Now this pollution will affect the health of people living near the factory even though they were not part of the production process. So the pollution is an externality of the production process. Costs or benefits of such externalities are hard to assess and are hence not part of national income accounting.

Recap

- National income can be estimated through factor/product, income, or expenditure method
- The production method calculates GVA by subtracting intermediate consumption from output
- The economy is divided into primary, secondary, and tertiary sectors in the value-added approach

- Income method aggregates compensation of employees, operating surplus, and mixed income
- Expenditure method sums up final consumption, investment, government expenditure, and net exports
- Only final goods and services are included in national income estimation
- Transfer payments, second-hand goods, and illegal incomes are excluded from national income
- Household production and imputed rent are partially considered in income estimates
- Externalities like pollution distort the welfare interpretation of national income
- Inventory investment is computed as change in stock
- Net exports refer to exports minus imports
- Compensation includes wages, bonuses, insurance, and pensions
- National income fails to reflect income inequality and non-market transactions

Objective Questions

1. Which method calculates national income as C + I + G + (X – M)?
2. What is the formula for NDPFC under the Income Method?
3. Why are second-hand goods excluded from national income?
4. Name a challenge in measuring national income.
5. How is Value Added calculated in the Factor Method?
6. What is excluded from the Income Method?
7. Which sector's GVA includes agriculture?
8. What is operating surplus?
9. How does the factor method avoid double-counting?
10. What is a limitation of GDP growth as a welfare indicator?
11. Why are illegal activities excluded?
12. What is imputed value in national income?

Answers

1. Expenditure Method
2. Compensation of Employees + Operating Surplus + Mixed Income
3. Already counted during initial sale
4. Non-inclusion of unpaid housework
5. Value of Output – Intermediate Consumption
6. Transfer payments (e.g., gifts)
7. Primary Sector
8. Income from property/entrepreneurship (rent, profit, interest)
9. Excludes intermediate goods
10. Ignores income inequality
11. No legal production records
12. Estimated value of self-consumed goods (e.g., farmer's crop)

Assignments

1. From the following data calculate National Income by (i) Expenditure Method and (ii) Income Method.

Items	(Rs.in Crore)
Compensation of employees	240
Interest	62
Profit	160
Private final consumption expenditure	400
Government final consumption expenditure	200
Net exports	(-) 04
Net indirect taxes	74
Net domestic capital formation	160
Depreciation	20
Net factor income from abroad	(-) 02
Rent	40
Mixed income of self employed	180

2. Explain with examples the calculation of national income using the value-added method.

3. Compare Income and Expenditure Methods.

4. Calculate NNP_{FC} if NDP_{FC} = ₹50,000cr and NFIA = ₹1,200cr.

5. Examine the limitations of national income accounting with reference to black market and unpaid work.

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BLOCK

Classical Macroeconomics

UNIT 1

Classical Approach and the Mechanism of Macroeconomic Adjustment

Learning Outcomes

After completing this unit, the learner will be able to:

- understand the classical assumptions
- discuss Say's Law
- know the role of wage and price flexibility
- understand the saving-investment equality

Prerequisites

In the early days of trade, before governments printed money or economists built models, people exchanged goods and services directly. A potter made clay pots not to admire them on a shelf but to trade them for rice, cloth, or milk. A farmer brought surplus grain to the village square, trusting that it could be exchanged for oil or tools. There were no policies, no taxes, and no interference, just a natural flow of production and exchange that connected needs to goods and effort to reward. What made this system work was the simple belief that if you produced something of value, someone else would need it. This belief was more than optimism; it was the glue that held pre-modern economies together.

Centuries later, during the Industrial Revolution, towns expanded and markets became more complex, yet the essence of trade remained the same. People specialised, factories replaced workshops, and coins replaced barter, but producers still worked with the conviction that their output had a place in the marketplace. Employers paid workers, workers spent their wages, and money moved through the economy like blood through veins. The notion that production itself could sustain economic activity became more than just common sense; it became a theory. This is the world that classical economists observed. They saw a system

that largely operated on trust, self-interest, and voluntary exchange. No one was coordinating these activities from above, yet the economy appeared to regulate itself. Goods produced were sold, jobs created incomes, and prices adjusted to keep things moving. It was not a perfect world, but it functioned without planned intervention. From this, classical thinkers drew an elegant conclusion: the economy, like nature, could find balance on its own.

Understanding this lived experience is important before understanding classical macroeconomics. It explains why early economists like Smith, Ricardo, and Say had immense faith in the market mechanism. Their ideas were not abstractions; they were reflections of a world that appeared to work, where every producer expected to be met by a buyer, and every effort seemed to find its reward. Say's Law, often misunderstood today, is rooted in this faith: that every act of production creates income and demand, not in isolation, but as part of a larger, interdependent process.

Keywords

Say's Law, Wage Flexibility, Price Flexibility, Saving-Investment Equality, Rational Agents, Perfect Competition, Market Equilibrium, Interest Rate, Full Employment

Discussion

3.1.1 Classical Approach

Classical economics emerged during the late 18th and early 19th centuries in response to the transformation of societies under industrial capitalism. It is rooted in the works of economists such as Adam Smith, David Ricardo, Jean-Baptiste Say, and John Stuart Mill, who collectively developed a framework that viewed the economy as a system governed by natural laws, much like those found in the physical sciences. At its heart, classical economics envisions a world where free markets, left to operate without state interference, have the natural capacity to organise production, distribute resources efficiently, and maintain full employment. This belief comes from a deep trust in the rational behaviour of individuals, where households aim to maximise utility and firms seek to maximise profits. The market, in this view, is seen as a powerful coordinator of these objectives, bringing demand and supply into equilibrium through flexible prices and wages.

One of the most distinctive aspects of classical economics is its emphasis on production as the driver of economic activity. In contrast to later Keynesian ideas that emphasise demand, classical thinkers believed that goods and services produced would

naturally create their own demand, an idea captured in Say's Law. Moreover, classical theory adopts a long-run perspective, focusing on the economy's tendency to return to equilibrium after any disturbance. Short-term imbalances, such as unemployment or inflation, are considered temporary deviations that will be corrected naturally through adjustments in wages, prices, and interest rates. Government intervention is not only unnecessary but potentially harmful, as it may distort the market's natural corrective processes. This philosophy of non-intervention, or laissez-faire, became central to classical policy.

Despite its eventual decline in influence during the Great Depression, when its predictions failed to explain persistent unemployment and deflation, classical economics remains foundational to the discipline. It has shaped the development of subsequent schools such as neo-classical economics, monetarism, and rational expectations theory. The classical approach is essential not only because of its historical significance but also because many of its principles, like the belief in market efficiency, rationality, and long-run equilibrium, continue to inform economic modelling and policy debates in the modern era. Thus, classical economics offers more than just a historical framework; it provides a lens through which we can understand both the origins and evolution of macroeconomic thought.

3.1.1.1 Assumptions of Classical Economics

The classical model of economics rests on a set of strong foundational assumptions that together create a vision of an economy that is efficient, self-regulating, and stable over the long run. These assumptions are not merely technical tools; they reflect a deep philosophical commitment to individual liberty, market freedom, and a natural economic order. They are:

- **Full Employment of Resources:** A central assumption of classical economics is that all resources, especially labour, are fully employed. This does not mean that there is never any unemployment, but that unemployment is mostly voluntary or frictional (due to people changing jobs), rather than cyclical or structural. If unemployment does rise temporarily, it is expected to correct itself through adjustments in wages. The labour market is assumed to function efficiently so that all those willing to work at the prevailing wage rate can find employment.
- **Wage and Price Flexibility:** The classical economists believed that prices and wages are fully flexible and adjust quickly to changes in demand and supply. If there is a surplus of labour (unemployment), wages will fall, encouraging employers to hire more workers. Similarly, if goods remain unsold, prices will fall until consumers are willing to purchase them. This flexibility in wages and prices ensures that markets clear, eliminating excess demand or supply and keeping the economy in equilibrium.
- **Say's Law of Markets:** Perhaps the most well-known assumption of classical economics is Say's Law, which states that 'supply creates its own demand.' This means that every act of production creates an equivalent amount of income, which is then spent on goods and services. Thus, general overproduction or a deficiency of aggregate demand is impossible.

If people save instead of spend, the classical view holds that savings will be automatically channelled into investment via interest rate adjustments, keeping the economy in balance.

- **Neutrality of Money:** Money, in the classical model, is considered a 'veil,' a means of facilitating transactions but with no real effect on output, employment, or other real economic variables in the long run. This assumption, known as the neutrality of money, implies that changes in the money supply only affect nominal variables like the price level and wages, but not the real economy. This forms the basis for the classical belief that monetary policy has no role in influencing real economic activity over time.

- **Rational Economic Agents:** Classical economists assumed that individuals are rational and make decisions that maximise their utility (in the case of consumers) or profits (in the case of producers). This rationality ensures that economic agents respond predictably to changes in incentives, such as prices or interest rates. Because of this behaviour, markets are seen as capable of self-correction, as individuals adjust their actions to restore equilibrium.

- **Perfect Competition:** All markets in the classical model are assumed to be perfectly competitive. This means that no single buyer or seller can influence the market price, all goods are homogeneous, and information is freely available to all participants. In such an environment, firms operate at optimal efficiency, resources are allocated without distortion, and the economy moves toward equilibrium naturally.

- **Savings-Investment Equality through Interest Rate Adjustment:** The classical model assumes that savings and investment are brought into equality through changes in the interest rate. If people decide to save more, the supply of loanable funds increases, pushing down the interest rate. Lower interest rates, in turn, encourage firms to invest more, thereby maintaining the balance between savings and investment. This ensures that income generated from production is either consumed or invested, sustaining overall demand.

- **Long-Run Orientation:** Classical economists were primarily concerned with long-run outcomes. They believed that any short-term imbalances would be temporary and corrected over time through market mechanisms. As such, their focus was on the economy's capacity to return to full employment and stable growth without needing active policy intervention.

Together, these assumptions form the backbone of classical economic theory. They construct an idealised image of the economy where rational agents, flexible prices, and competitive markets interact to ensure efficiency and full employment. While these assumptions may not fully reflect the complexities of modern economies, they provide a powerful analytical framework that continues to influence economic thinking even today. Understanding them is crucial for evaluating both classical economics itself and the schools of thought that challenged or extended it.

Classical economics laid the groundwork for the formal study of macroeconomics, explaining how economies function through the forces of supply, self-interest, and market coordination. It champions the belief that economies are inherently self-regulating systems, where individuals pursuing their own goals unintentionally

contribute to societal welfare. Built upon assumptions of rational behaviour, full employment, wage-price flexibility, and perfectly competitive markets, the classical model underscores the power of market forces to restore equilibrium without the need for government intervention. More than just a historical school of thought, it continues to shape economic models, inspire policy frameworks, and challenge economists to reconsider the assumptions that underpin their understanding of how economies function. By studying classical economics, learners gain both a conceptual foundation and a critical lens through which the evolution of macroeconomic theory can be better appreciated.

3.1.2 Say's Law of Markets: "Supply Creates Its Own Demand"

At the heart of classical macroeconomics lies a powerful proposition known as Say's Law of Markets, formulated by the French economist Jean-Baptiste Say in the early 19th century. This law is more than just a theoretical claim; it forms the backbone of the classical explanation of how markets operate and how full employment is achieved. Say's most quoted phrase is: "It is production which opens a demand for products… supply creates its own demand." This simple yet profound statement means that every act of production generates income for the factors of production (labour, capital, land), and this income is used to purchase goods and services. Therefore, aggregate supply automatically creates an equal amount of aggregate demand. In essence, whenever goods are produced, they create the capacity to purchase other goods, making general overproduction, or persistent unemployment, impossible in the long run. When a firm produces output, it pays wages to workers, rents to landlords, interest to capitalists, and earns profits. These incomes are then used to purchase goods and services, ensuring that everything produced is eventually demanded. The economy, therefore, is always in a state of balance, with supply being the key driver of economic activity. According to Say, people do not work or produce goods without the intention of exchanging them for other goods. Thus, production itself implies demand. As each producer enters the market with a product, he becomes both a seller and a buyer. This interplay of supply and demand in a free market ensures continuous circulation of goods and money.

The key assumptions of Say's Law are as follows:

1. **Free Market System**: There are no barriers or distortions in the working of markets. Buyers and sellers operate freely.
2. **No Government Intervention**: The government does not interfere in production, pricing, or employment decisions.
3. **Price, Wage, and Interest Rate Flexibility**: Markets adjust automatically. If unemployment arises, falling wages will restore equilibrium.
4. **Neutral Role of Money**: Money is only a medium of exchange; it does not influence real variables like output or employment.
5. **Closed Economy**: The model assumes no international trade, so all income generated is spent domestically.

6. **Full Employment**: The economy always tends toward full employment through self-correction.

7. **Equality of Saving and Investment**: Any income not consumed (i.e., saved) is automatically invested.

Originally formulated in the context of a barter system, Say's Law assumes that goods are exchanged for goods. In a barter economy, one would produce to obtain other goods directly. However, in a monetised economy, money serves as a medium of exchange, but the logic remains the same: production leads to income, and income leads to expenditure. Thus, whether using wheat to trade for cloth or using wages to buy mobile phones, production remains the root of demand.

Say's Law implies several important conclusions about how a classical economy functions. Firstly, it suggests that general overproduction is not possible; while there may be temporary overproduction in individual sectors, the economy as a whole self-adjusts through market mechanisms. This leads to the second implication, that full employment is considered a natural state of the economy. Any deviations from this level are viewed as temporary and are expected to self-correct through adjustments in wages and interest rates. Moreover, Say's Law supports the idea of automatic market adjustments, where imbalances in the labour and capital markets are resolved through the flexibility of wages and interest rates. Finally, the law asserts that saving and investment are always equal, with the interest rate acting as the balancing mechanism between the desire to save and the willingness to invest. Together, these implications reflect the classical belief in a self-regulating economy that requires minimal government intervention.

In the classical framework, unemployment in the labour market is primarily attributed to wage rigidity. Classical economists claimed that if wages are flexible and allowed to fall in response to an excess supply of labour, the market would automatically restore full employment. In this view, a reduction in wage levels would increase the demand for labour, thereby eliminating involuntary unemployment. Say's Law, which underpins this perspective, assumes that workers would accept lower wages, particularly during economic downturns, thereby allowing the labour market to remain in equilibrium. However, this perspective was critically challenged by John Maynard Keynes, especially during the context of the Great Depression. Keynes argued that demand, not supply, is the true driver of economic activity, and that supply does not necessarily generate its own demand. He refuted the assumption of money neutrality, pointing out that individuals might hoard money in times of uncertainty, which disrupts the normal flow of spending and weakens the connection between income and expenditure. Furthermore, he noted that savings do not automatically translate into investment, as investment decisions are largely influenced by business confidence and future expectations, not merely by the interest rate. According to Keynes, unemployment can persist over time because markets are not always self-correcting, particularly when wages are inflexible or "sticky" downwards. In such situations, government intervention becomes essential. Keynes thus advocated for the active use of fiscal and monetary policy to boost aggregate demand and maintain full employment in the economy, fundamentally challenging the classical reliance on laissez-faire mechanisms.

Say's Law forms the cornerstone of classical macroeconomic thought, asserting that the act of production itself creates the means and motivation for consumption. By emphasising the natural harmony between supply and demand, and assuming full employment through flexible prices, wages, and interest rates, the law portrays a self-regulating economy free from persistent crises. While its assumptions may not hold in modern, complex economies, Say's Law remains a foundational idea that highlights the productive process as the driver of economic activity. Its subsequent critique by Keynes marked a major shift in economic theory, yet its influence endures in classical and supply-side interpretations of macroeconomics.

3.1.3 Wage and Price Flexibility in Classical Economics

One of the central beliefs of classical economists is that wages and prices are flexible, meaning they can increase or decrease based on the conditions in the economy. This idea is crucial to the classical belief in a self-correcting economy, where government intervention is not needed to solve economic problems like unemployment or inflation. According to classical theory, when the economy experiences any disturbance or imbalance, adjustments in wages and prices will naturally bring it back to a stable state of full employment and equilibrium.

Wage flexibility refers to the ability of wages, what workers earn, to rise or fall depending on supply and demand in the labour market. For instance, if there are more workers than jobs available, classical economists argue that wages will fall because firms do not need to offer high pay to attract employees. Lower wages reduce the cost of hiring, making it more affordable for businesses to employ more workers. As a result, unemployment decreases, and the economy moves back towards full employment. On the other hand, when there is a shortage of workers, wages will rise, attracting more people to work and balancing the labour market.

Price flexibility, on the other hand, means that the prices of goods and services also adjust according to demand and supply. When a product is overproduced and there is not enough demand, its price will fall. Lower prices make the product more attractive to buyers, increasing demand and helping to clear the surplus. Conversely, if a product is in short supply and highly demanded, its price will increase, encouraging producers to make more of it. This automatic adjustment ensures that markets return to balance without needing external control.

The classical school firmly believed that such adjustments occur naturally in a free-market economy, where there is minimal government interference. Thinkers like Adam Smith and J.B. Say supported the idea of laissez-faire, where the economy functions efficiently if left on its own. In this framework, wage and price flexibility play a key role in ensuring that markets clear; that is, there is no prolonged unemployment or overproduction. The flexibility in both labour and product markets guarantees that any temporary imbalances are corrected over time.

A practical example can help clarify this idea. Suppose the economy is facing unemployment. Classical economists would suggest that if wages are allowed to fall,

employers will find it less costly to hire more workers. As more people get employed, incomes rise, consumption increases, and demand for goods and services picks up. This, in turn, encourages firms to produce more and potentially hire even more workers, thereby restoring full employment. Similarly, if a particular product is not selling well and piles up in warehouses, price reductions will make the product more appealing to consumers, eventually clearing the excess supply.

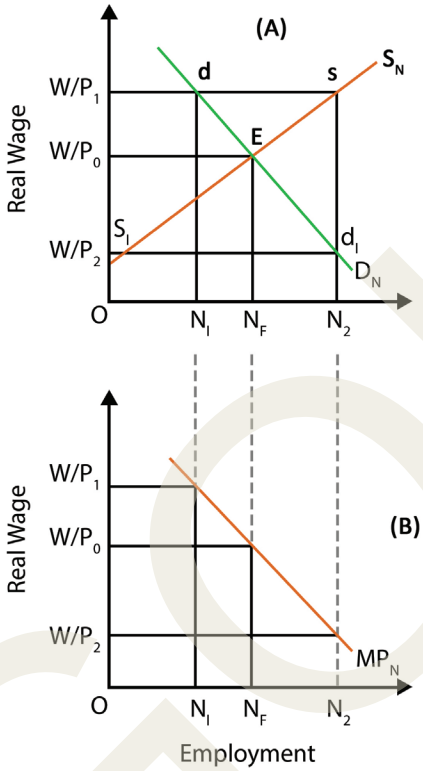

Fig 3.1. 1 Wage Price Flexibility

The figure given illustrates how wage-price flexibility facilitates a return to full employment in classical economics. In Panel (A), the vertical axis measures real wages (W/P), and the horizontal axis shows employment levels. The labour supply curve (SN) slopes upward, while the labour demand curve (DN) slopes downward, intersecting at point E, which represents the full employment level (N_f) at the equilibrium real wage (W/P_0). If real wages rise above this point to W/P_1, the supply of labour exceeds demand, causing unemployment between N_1 and N_f. Conversely, if wages fall to W/P_2, the demand for labour exceeds its supply, leading to excess demand from N_f to N_2, eventually pushing wages back up. Panel (B) reinforces this mechanism by showing the downward-sloping marginal product of labour (MP_N) curve. As real wages decrease, firms find it more profitable to hire additional workers, moving the economy toward full employment. This flexible adjustment of wages and labour demand ensures that the economy self-corrects without the need for external intervention.

Wage and price flexibility are seen by classical economists as a self-regulating mechanism that restores economic stability. By allowing wages and prices to adjust freely, the economy can overcome issues like unemployment or unsold goods without external intervention. This belief in the economy's natural ability to maintain full

employment and equilibrium is a foundational concept in classical macroeconomics and illustrates their trust in the efficiency of free markets.

3.1.4 Saving–Investment Equality in Classical Economics

In classical economics, saving and investment are two key components that determine the overall functioning of the economy, particularly in maintaining full employment and ensuring long-run equilibrium. Classical economists believed that whatever portion of income is not consumed, i.e., saved, will automatically find its way into productive investment. This concept of saving–investment equality is essential to the classical view that the economy is self-regulating and does not require external intervention to function smoothly.

The fundamental idea is that households save a portion of their income, and these savings become available as loanable funds in financial markets. On the other side, entrepreneurs or firms borrow these funds to invest in capital goods such as machines, tools, or infrastructure. According to classical thought, the interest rate plays a pivotal role in ensuring that the amount saved by households is equal to the amount borrowed for investment by firms. In other words, the interest rate adjusts automatically to bring saving (S) and investment (I) into equilibrium. If saving exceeds investment, the interest rate will fall, encouraging more investment and reducing the incentive to save. If investment exceeds saving, the interest rate rises, encouraging more saving and reducing excessive investment. This dynamic ensures that no surplus or shortage of funds exists in the economy.

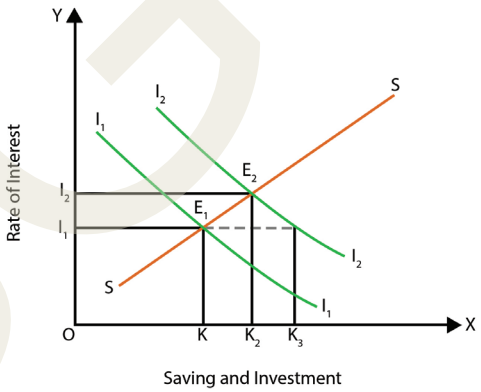

Fig 3.1.2 Savings Investment Equality

The figure given above represents the classical view of the loanable funds market, which illustrates how saving and investment are equated through the mechanism of the interest rate. The vertical axis (Y-axis) shows the rate of interest, and the horizontal axis (X-axis) shows the volume of saving and investment. The upward-sloping curve labelled S represents the supply of saving. It suggests that as interest rates rise, people are more inclined to save since the reward (return on savings) is higher. The downward-sloping curves I_1 and I_2 represent investment demand. As interest rates decrease, borrowing becomes cheaper, and firms are more willing to take loans to invest in capital. At point E_1, the saving curve (S) intersects the investment curve (I_1) at interest rate r_1,

establishing the initial equilibrium where saving equals investment at quantity K. If there is an increase in business optimism or growth prospects, the investment curve shifts right to I_2, resulting in a new equilibrium at point E_2 with a higher interest rate r_2 and a new level of saving–investment at K_2. This diagram clearly demonstrates how fluctuations in investment demand or saving supply do not lead to long-term imbalances. Instead, changes in the interest rate act as an automatic correction mechanism. This self-adjustment principle forms a core belief in classical economics.

The assumption that interest rate flexibility ensures balance between saving and investment reflects the classical trust in the efficiency of free markets. Unlike later theories (especially Keynesian), classical economists did not view savings as a potential problem for economic stagnation. They saw savings as a productive activity, since all savings are eventually channelled into investment. Hence, classical economists upheld the idea that savings never 'sit idle' in the economy; they are always utilised. Another key implication is that government intervention in the form of monetary or fiscal policy is unnecessary. Since the economy has its own internal mechanism (interest rate) to maintain balance between saving and investment, any external interference could disrupt this natural process. This reflects the classical emphasis on laissez-faire policies and the belief that markets, if left alone, operate efficiently. However, this view relies on several ideal conditions: perfectly competitive markets, full employment, rational expectations, and the absence of money hoarding. In the real world, such assumptions often do not hold, and that's where Keynes challenged this theory. But within its own framework, the classical model provides a neat, logical, and elegant explanation of how savings and investments are brought into alignment, maintaining macroeconomic stability.

Recap

- Classical economics governed by natural laws could organise production and ensure full employment
- The classical model assumes that individuals act rationally to maximise utility and profit
- Say's Law states that supply creates its own demand
- Classical economics adopts a long-run view
- Money is considered neutral in the long run, affecting only nominal variables
- In classical theory, wage and price flexibility ensure that labour and goods markets clear automatically
- The labour market equilibrium is achieved through adjustments in real wages, which rise or fall depending on the supply and demand for labour

- The classical framework opposes government intervention
- The economy has built-in mechanisms for restoring equilibrium and maintaining macroeconomic stability
- Keynes challenged classical views by arguing that supply does not always create demand, money is not neutral in the short run, and government intervention is needed to correct unemployment and demand failures
- According to Keynes, wages are sticky, people may hoard money, and investment depends on business expectations
- Say's Law was central to classical thought but failed during the Great Depression, leading Keynes to promote fiscal and monetary policy
- Classical theory remains influential for understanding market efficiency and long-run equilibrium

Objective Questions

1. What does Say's Law state?
2. What type of unemployment does classical theory consider normal?
3. What ensures market clearance in classical economics?
4. What brings saving and investment into equilibrium?
5. What type of competition is assumed in classical markets?
6. What is money considered in classical macroeconomics?
7. What is ruled out in the long run under classical economics?
8. What happens if savings exceed investment in the classical system?
9. What happens if investment exceeds savings in the classical model?
10. In classical theory, what is always achieved in the goods market?
11. What does Say's Law rule out in the long run?
12. What happens to wages if there is surplus labour?
13. What happens to prices when goods remain unsold?
14. What kind of economy is described in Say's Law – open or closed?

Answers

1. Supply creates demand
2. Frictional
3. Price flexibility
4. Interest rate
5. Perfect competition
6. Neutral
7. Unemployment
8. Interest rate falls
9. Interest rate rises
10. Equilibrium
11. Overproduction
12. Wage rates fall
13. Prices fall
14. Closed

Assignments

1. Explain the core assumptions of classical macroeconomic theory.
2. Define Say's Law and discuss its implications for output and employment.
3. How does wage flexibility contribute to full employment in classical economics?
4. Describe the classical explanation of saving–investment equality with the help of a diagram.

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UNIT 2

Classical Theory of Output and Employment

Learning Outcomes

After completing this unit, the learner will be able to:

- understand the classical theory of output and employment
- discuss how output and employment are determined in classical economics
- examine labour, goods, and money market equilibrium in the classical system

Prerequisites

In the era of steam engines and textile mills, busy industrial towns became the face of economic progress. Streets echoed with the sound of factory whistles, signalling the start and end of a worker's day. Inside these factories, workers manned machines, managers tracked production, and owners calculated costs and returns. There was a rhythm to this industrial life, a rhythm built around work, wages, and output. If a person was willing to work, there was almost always something to be done. This strong association between effort and employment, production and prosperity, shaped how early economists viewed the economy.

For the classical economists, this industrial experience was not just an economic phenomenon, it was proof of a deeper order. They believed that just as natural laws governed the physical world, economic laws governed markets. People, they observed, responded to incentives: they worked for wages, firms hired when profits seemed likely, and prices guided both consumption and production. The belief that markets would naturally find balance was not based on wishful thinking; it was grounded in daily realities. If jobs were scarce, wages would fall, making it cheaper for firms to hire. If goods were unsold, prices would drop

until people could afford to buy them. To classical thinkers, these were not just observations; they were mechanisms that restored balance.

It is in this context that classical economists developed their views on employment and output. They saw the economy as a system of interconnected markets: labour, goods, and money, all adjusting through price and wage movements. They did not see unemployment as a lasting condition, but rather as a temporary mismatch that would self-correct. Their focus was on the long run, where adjustments had time to work and all resources were fully utilised. In their view, economic output was directly tied to the quantity of labour employed, and employment itself was governed by the willingness of workers and the ability of wages to reflect market conditions.

Keywords

Full Employment, Labour Market, Production Function, Real Wages, Wage-Price Flexibility, Saving-Investment Equality, Quantity Theory of Money, Voluntary Unemployment, Marginal Productivity

Discussion

3.2.1 Classical Theory of Output and Employment

Classical economists strongly believed that full employment is the natural and normal state of any economy. According to them, if the economy is allowed to function freely, without any external interference, it will automatically reach a situation where all those who are willing to work at the prevailing wage rate will be employed. Any deviation from this condition, such as widespread unemployment, is seen as temporary and caused by some distortion or obstruction in the functioning of the free market.

One of the key contributors to this view was Arthur Cecil Pigou, who argued that the labour market has a natural tendency to restore full employment. He believed that if wages are flexible, the supply of and demand for labour will eventually match. Whenever there is unemployment, wages will fall, encouraging firms to hire more workers. As a result, employment will rise again to its full level. However, if wages are prevented from falling due to trade unions, minimum wage laws, or government regulations, then the labour market cannot adjust, and unemployment may persist.

Importantly, the classical theory makes a clear distinction between voluntary and involuntary unemployment. According to this view, full employment does not mean that every person is working. Instead, it means that everyone who is willing to work

at the current wage rate has a job. Those who are not working because they refuse the wage being offered are considered voluntarily unemployed. Therefore, the classical concept of full employment assumes that involuntary unemployment does not exist in a well-functioning, competitive economy. This theory is built upon Say's Law of Markets, which states that supply creates its own demand. In other words, whatever is produced will eventually be sold, and this ensures that goods markets remain in equilibrium. Classical economists like Alfred Marshall and Pigou extended this logic to the labour market, arguing that just as goods find buyers, labour too will find demand, provided there are no barriers to wage adjustment.

The classical framework treats the economy as a collection of interconnected markets: for labour, goods, and money. Each of these markets has its own built-in mechanism to maintain balance. If left undisturbed, the classical economists believed these markets would work together to sustain a level of output and employment consistent with full employment. As a result, government intervention was seen as unnecessary, or even harmful, because it could distort the natural adjustment process of the economy.

The Classical Theory of Output and Employment rests on a set of key assumptions that reflect the economists' belief in the self-regulating nature of markets. These assumptions provide the foundation for their argument that the economy naturally moves towards full employment without the need for government intervention.

- **Full Employment Exists**: The economy naturally operates at full employment; any unemployment is seen as temporary or voluntary.
- **Laissez-faire Economy**: The government does not interfere in economic decisions. The economy is guided by free market forces.
- **Closed Economy**: There is no foreign trade. All production and consumption occur within the domestic economy.
- **Perfect Competition**: There are many buyers and sellers in both the labour and product markets. No single agent can influence prices or wages.
- **Homogeneous Labour**: All workers are assumed to have similar skills and productivity, allowing easy movement between jobs.
- **Output is Split Between Consumption and Investment**: All goods produced are either consumed or invested; there's no waste.
- **Money is Just a Medium of Exchange**: Money facilitates trade but does not influence real variables like output or employment.
- **Fixed Quantity of Money**: The supply of money in the economy is assumed to be constant.
- **Flexible Wages and Prices**: Wages and prices can freely rise or fall to correct imbalances in supply and demand.
- **Perfect Information**: Everyone in the market knows all relevant facts and can make rational decisions.
- **Direct Relationship Between Money and Real Wages**: Real wages change proportionally with money wages and price levels.

- **Savings Are Automatically Invested**: Whatever is saved is automatically invested, and the interest rate ensures equality between the two.
- **Fixed Capital and Technology**: The economy's capital stock and level of technology do not change in the short run.
- **Law of Diminishing Returns Applies**: Adding more of a variable input to fixed resources eventually leads to lower additional output.
- **Long-run Perspective**: The theory applies to the long run, where markets are given time to adjust and reach equilibrium.

The entire classical framework is built on the assumption that the economy operates in the long run, during which all markets have enough time to adjust and reach equilibrium naturally.

3.2.1.1 Determination of Output and Employment in Classical Theory

In classical economics, the level of output and employment in an economy is determined by how much labour is used in the production process, considering the available capital and technology. Classical economists believed that the economy always tends toward a state of full employment through natural market forces, without the need for government intervention. A central tool in understanding this relationship is the production function, which shows how output (Q) depends on the amount of capital (K), technology (T), and labour (N) available in the economy. This relationship is expressed as:

$$Q = f(K, T, N)$$

This means that the total output produced is a result of how these three inputs are combined. However, if we assume that both capital and technology remain constant over the short run, the production function simplifies to:

$$Q = f(N)$$

This implies that output is directly determined by the number of workers employed. As more labour is used, total output increases. However, after a certain point, each additional worker contributes less to output than the previous one. This is due to the law of diminishing marginal returns, a key concept in classical economics.

Imagine a factory with a fixed number of machines and tools (capital). At first, adding more workers increases production efficiently. But as more and more workers are hired, they begin to get in each other's way or have to wait to use the machines. As a result, the extra output produced by each new worker starts to fall.

This relationship is shown in the figure 3.2.1, through a production function curve. The curve slopes upward, indicating that more workers produce more output. But the slope gradually flattens, reflecting diminishing returns. The point at which the output reaches its maximum possible level with full utilisation of labour is called the full employment level. Employing more workers beyond this point results in only small increases in output, which is inefficient.

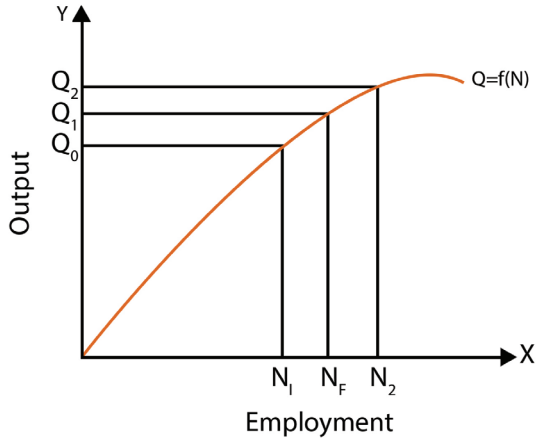

Fig 3.2.1 Production Function

Labour Market Equilibrium

In classical macroeconomics, the labour market plays a key role in determining the level of employment and output in an economy. The equilibrium in this market is reached through the interaction of labour demand and labour supply, both of which are influenced by the real wage rate, that is, the wage rate adjusted for the price level (W/P). Classical economists believe that the demand for labour depends on how much output a worker can produce, which relates to the real wage (W/P). Employers are willing to hire more workers when the real wage is lower, as it becomes cheaper to employ additional labour. Therefore, the demand for labour is a decreasing function of the real wage, meaning as real wages rise, employers demand fewer workers. This relationship is illustrated by a downward-sloping demand curve in a labour market diagram.

On the other hand, the supply of labour also responds to the real wage. As wages rise, more individuals are willing to work, since higher pay provides greater incentive. Hence, the supply of labour is an increasing function of the real wage, represented by an upward-sloping supply curve. Workers are motivated to join the workforce or work longer hours when they are paid more in real terms. The equilibrium point in the labour market occurs where the demand and supply curves intersect. At this point, the real wage rate (W/P_0) ensures that the number of workers employers want to hire is exactly equal to the number of workers willing to work. This equilibrium level of employment is considered the full employment level, denoted as N_f in the diagram.

If real wages rise above the equilibrium level, say to W/P_1, the supply of labour exceeds the demand. This creates a surplus of workers, or involuntary unemployment, as not all those willing to work at that higher wage will find jobs. Classical economists argue that, due to competition among unemployed workers, wages will gradually fall back to W/P_0, restoring balance in the labour market and returning to full employment. Conversely, if the real wage drops below equilibrium, say to W/P_2, employers demand more workers than are willing to work, resulting in a labour shortage. This leads to competition among employers, driving up wages. As real wages rise back to W/P_0, the market again reaches equilibrium and full employment is restored.

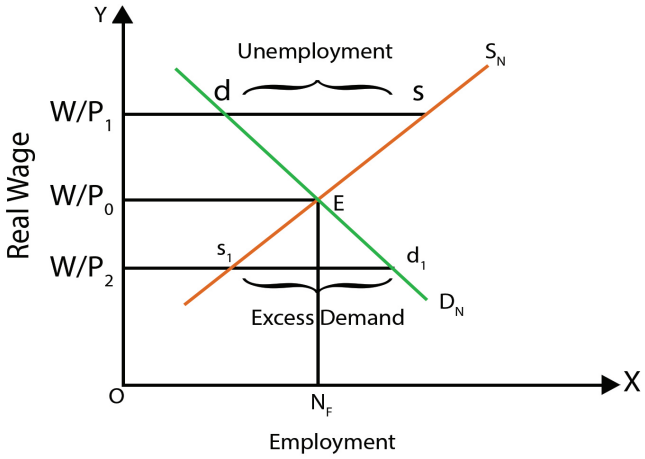

Fig 3.2.2 Labour Market Equilibrium

Wage-Price Flexibility

One of the central ideas in classical economics is the belief that the economy always tends towards full employment, and if any unemployment arises, it is only temporary. Classical economists argued that the labour market has a natural ability to correct itself through adjustments in money wages and prices, a concept known as wage-price flexibility. According to classical thinking, if unemployment arises in the economy, it can be resolved by reducing money wages, the actual amount of money workers are paid. When money wages fall, the cost of production for firms also decreases. As production costs decline, prices of goods and services also fall. This reduction in prices makes products more affordable, leading to higher demand, increased sales, and a boost in production activity. To meet this increased demand, firms hire more workers, and the economy returns to its full employment level.

Economist Arthur Pigou explained this process with the formula:

$N = qY / W$

Where:

- N is the number of workers employed
- q is the share of income that goes to labour
- Y is the national income
- W is the money wage rate

According to this equation, if money wages (W) fall while other factors remain constant, employment (N) will increase. Thus, wage reduction is seen as a key tool for restoring full employment. In classical economics, the real wage (W/P), which is money wage (W) divided by the price level (P), determines the level of employment. Firms hire workers based on how much each worker contributes to production, known as the marginal product of labour (MP_N). The relationship is expressed as:

$W = P \times MP_N$, or rearranged as $\frac{W}{I} = MP_N$

As more workers are hired, the marginal product of labour falls (due to the law of diminishing returns), which means firms will only continue hiring if real wages decline. Therefore, employment increases when real wages fall.

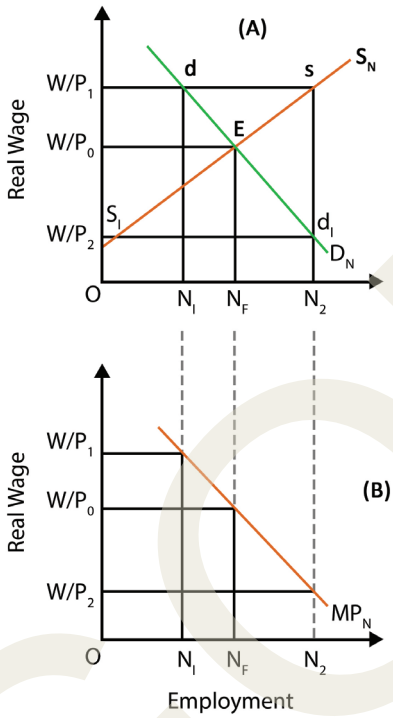

Fig 3.2.3 Wage-Price Flexibility

In Panel A of the diagram (refer to the image above):

- The supply curve (S) of labour is upward sloping, and the demand curve (D) is downward sloping.
- They intersect at point E, showing full employment at real wage W/P_0 and employment level N_f.
- If the real wage rises to W/P_1, labour supply exceeds demand, leading to unemployment between N_1 and N_f.
- Reducing the wage back to W/P_0 eliminates the surplus and restores full employment.

In Panel B:

- The MP_N curve slopes downward, indicating that the marginal product of each additional worker decreases.
- At W/P_0, employment is at the full level N_f.
- If wages fall below this level to W/P_2, the demand for labour exceeds supply, creating excess demand for workers.

- This pushes wages back up to equilibrium, again leading the system back to full employment.

Classical economists believed that flexibility in wages and prices ensures that markets remain balanced. Any short-term imbalance, such as unemployment or overproduction, would be corrected naturally as wages and prices adjust. In this view, there is no need for government intervention, as the market mechanism itself restores full employment over time.

Goods Market Equilibrium

In classical macroeconomics, the goods market is said to be in equilibrium when total saving (S) equals total investment (I). This equality ensures that total supply matches total demand, keeping the economy at a state of full employment. Classical economists strongly believed that what is not spent by households (i.e., savings) is automatically channelled into investment through the rate of interest.

In classical economics, both saving and investment are considered functions of the interest rate. Saving, denoted as S = f(r), is positively related to the rate of interest. As interest rates increase, individuals are more inclined to save because the returns on their savings are higher. On the other hand, investment, represented as I = f(r), behaves in the opposite way. As interest rates rise, borrowing costs become more expensive for firms, leading to a decrease in investment. Thus, saving and investment move in opposite directions with changes in the interest rate: a higher interest rate encourages more saving but discourages investment, while a lower interest rate discourages saving but boosts investment activity.

Equilibrium in the goods market is achieved when saving equals investment. If, at any time, investment exceeds saving (I > S), it implies that there is excess demand for capital. This puts upward pressure on the interest rate. As the interest rate rises, saving increases due to the more attractive returns, and investment declines because of higher borrowing costs. This adjustment continues until saving and investment are brought into balance. Conversely, if saving exceeds investment (S > I), there is excess supply of capital in the market. This surplus leads to a fall in the interest rate, which discourages saving while simultaneously encouraging more investment. Through these automatic adjustments in the interest rate, the classical theory maintains that the equality of saving and investment is always achieved, thereby ensuring full employment in the economy.

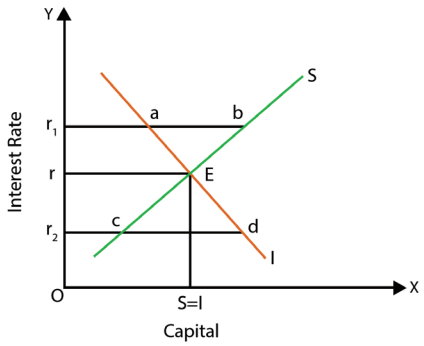

Fig 3.2.4 Goods Market Equilibrium

The classical framework presents a clear graphical representation of saving and investment behaviour in relation to interest rates. In the diagram, the saving curve (S) slopes upwards, reflecting that as interest rates rise, individuals are incentivised to save more. Conversely, the investment curve (I) slopes downwards, indicating that higher interest rates discourage investment since the cost of borrowing becomes more expensive. The point of intersection, labelled E, represents the equilibrium where saving equals investment (S = I) at the interest rate Or. If the interest rate rises above this level, say to Or_1, saving begins to exceed investment (S > I). This surplus of capital supply over demand causes the interest rate to fall back toward the equilibrium level Or. Similarly, if the interest rate falls below Or, say to Or_2, investment exceeds saving (I > S), leading to excess demand for capital, which in turn pushes the interest rate up until equilibrium is re-established.

This self-correcting mechanism is central to the classical belief in a stable and self-regulating economic system. Classical economists argued that the interest rate plays a pivotal role in aligning saving and investment, ensuring that any temporary imbalance is automatically corrected. This flexibility of the interest rate guarantees that total demand equals total supply in the goods market, maintaining equilibrium without external intervention. As a result, classical theory supports the broader notion of a naturally balanced economy, where full employment is the norm and government interference is both unnecessary and undesirable.

Money Market Equilibrium

In classical economic theory, money market equilibrium is primarily explained using the Quantity Theory of Money. This theory suggests that the general price level in the economy is determined by the supply of money. The classical economists expressed this relationship through the equation:

$$MV = PT$$

where:

- M is the supply of money,
- V is the velocity of money (i.e., how many times a unit of money circulates in the economy),
- P is the price level, and
- T represents the total volume of transactions or total output.

According to this equation, the total amount of money spent in the economy (MV) must equal the total value of goods and services sold (PT). If we assume that the velocity of money (V) and the volume of transactions or output (T) remain constant, then any change in the money supply (M) will cause a direct and proportional change in the price level (P). This means that if the money supply doubles, the price level also doubles. Thus, in the classical view, prices rise or fall in proportion to changes in money supply, keeping the output unchanged at its full employment level.

This relationship can be illustrated through the panel E of figure 3.2.5. The horizontal axis shows the price level (P) and the vertical axis shows the level of output or total

transactions (T). The MV curve represents all the combinations of P and T that satisfy the equation MV = PT. The curve takes the shape of a rectangular hyperbola, meaning that if one variable (P or T) increases, the other must decrease to maintain equilibrium, unless the money supply changes.

The classical theory treats money as neutral, it only affects the price level and not output or employment. Money merely acts as a medium of exchange and does not interfere with real economic variables. As long as the economy operates at full employment, changes in the money supply only affect prices, not the volume of goods and services produced.

Classical Model

The classical theory of employment rests on a central belief: that full employment is the natural state of an economy. Any temporary unemployment is seen as abnormal and will be corrected automatically through the forces of supply and demand. This belief is grounded in Say's Law of Markets, which says: "Supply creates its own demand." That means whatever is produced in the economy will eventually be bought. So, overproduction and widespread unemployment should not persist for long.

According to the classical economists, if any imbalance, like unemployment, occurs, automatic adjustments in wages, prices, interest rates, and the money supply will guide the economy back to full employment. These adjustments happen through three key markets:

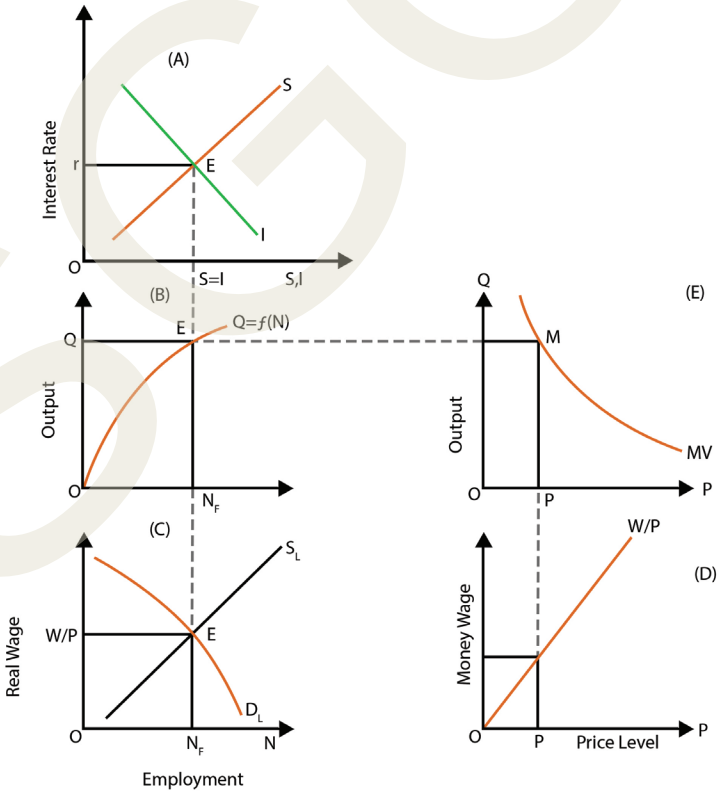

Fig 3.2.5 Classical Framework of Output, Employment, and Price Adjustment

Output and Employment

In the classical model, the total output and employment levels are primarily determined by the aggregate production function, which depends on:

- K – Capital stock
- T – Technical knowledge
- N – Number of workers

This relationship is expressed as:

$Q = f(K, T, N)$

If capital and technology are fixed, output depends solely on the number of workers:

$Q = f(N)$

As more workers are hired, total output increases. However, due to diminishing marginal returns, the additional output from each new worker gradually decreases. The economy reaches full employment at the point where hiring more workers does not significantly increase total output.

Labour Market Equilibrium

The classical labour market works through the forces of supply and demand for labour:

- Labour demand depends on the real wage (W/P) and is based on the marginal productivity of labour. As wages rise, firms hire fewer workers, making the demand curve downward sloping.
- Labour supply also depends on the real wage. Higher wages attract more people into the workforce, making the supply curve upward sloping.

The intersection of these two curves determines the equilibrium wage and employment level. This is the point of full employment. If wages are too high or too low, competition among workers or employers will push wages back to the equilibrium level.

Goods Market Equilibrium

The goods market is in equilibrium when saving equals investment (S = I). In the classical view, both savings and investment are influenced by the interest rate (r):

- Saving is an increasing function of the interest rate: people save more when interest is high.
- Investment is a decreasing function of the interest rate: businesses invest less when borrowing is expensive.

If saving exceeds investment or vice versa, the interest rate adjusts automatically to restore balance. This ensures that total demand equals total supply, keeping the economy at full employment.

Money Market Equilibrium

In the classical system, money plays only a supporting role as a medium of exchange. The Quantity Theory of Money explains the equilibrium in the money market through the equation:

MV = PT

Where:

- M is the money supply,
- V is the velocity of money (assumed constant),
- P is the price level,
- T is total output.

If the output and velocity are constant, any increase in the money supply will lead to a proportional increase in prices. Thus, money is neutral; it affects only prices, not real output or employment.

In the classical economic system, all three major markets, labour, goods, and money, work together to keep the economy in balance. Each market has its own built-in mechanism to maintain equilibrium. In the labour market, the interaction between supply and demand for labour determines the full employment level. The goods market finds its balance through the interest rate, which adjusts to ensure that saving equals investment. Meanwhile, in the money market, the price level is determined by the supply of money and the volume of transactions in the economy, as explained by the Quantity Theory of Money.

According to classical economists, if wages and prices are completely flexible, any shock or imbalance in the economy, like unemployment or inflation, will be automatically corrected by these market forces. There is no need for government interference. The economy, they believe, will naturally return to full employment on its own. This strong belief in a self-regulating economy is the reason why classical theory supports laissez-faire policies, meaning minimal government control and maximum freedom for markets to operate.

3.2.1.2 Keynes's Criticism of Classical Theory

John Maynard Keynes, in his landmark work *The General Theory of Employment, Interest and Money* (1936), strongly challenged the foundations of classical economics. According to him, the classical assumptions were not only unrealistic but also unhelpful in solving real-world problems like unemployment and economic depressions. Below are his key criticisms:

- **Underemployment is the Norm, Not Full Employment:** Classical economists believed full employment was the natural state of the economy. Keynes rejected this. He argued that underemployment is common, especially in capitalist economies. There are always workers willing to work at existing wages, or even less, but they still cannot find jobs. This

involuntary unemployment disproves the classical view.

- **Say's Law is Unrealistic:** Say's Law claims that "supply creates its own demand." Keynes disagreed. He argued that people do not spend all their income; they save a portion of it. But saving does not always lead to investment. This gap between savings and consumption leads to deficient demand, causing overproduction and unemployment. For Keynes, demand creates supply, not the other way around.

- **No Automatic Self-Correction:** Classical theory assumes that markets automatically adjust to achieve full employment. Keynes rejected this view, especially after observing the Great Depression. He argued that market forces alone cannot restore balance, especially in a world where rich people do not spend enough and poor people cannot spend at all. He therefore supported government intervention to manage the economy.

- **Saving-Investment Equality Happens via Income, Not Interest:** Classical economists believed that interest rates balance saving and investment. Keynes disagreed. He said that savings depend on income, and investment depends on business expectations and the marginal efficiency of capital, not just interest rates. So, if savings are greater than investment, income and demand fall until they match at a lower (underemployment) level.

- **Speculative Demand for Money is Important:** Classical economists ignored the speculative motive for holding money. Keynes introduced the concept of the liquidity trap: when interest rates are very low, people prefer to hold money instead of investing it. This makes monetary policy ineffective, and the interest rate cannot fall further to boost investment.

- **Money Supply Does Not Directly Affect Prices:** Keynes rejected the Quantity Theory of Money, which states that increasing the money supply automatically increases prices. He showed that if resources are underutilised, more money would lead to higher output and employment, not inflation. He also argued that the velocity of money (V) is not constant, as assumed in classical theory.

- **Money is Not Neutral:** Classical economists treated money as neutral; it only affected prices, not real variables like output or employment. Keynes rejected this. He argued that money and interest rates influence investment, income, and employment, making monetary policy a powerful tool in managing the economy.

- **Wage Cuts Will Not Solve Unemployment:** Classical theory claimed that cutting wages would reduce unemployment. Keynes strongly disagreed. A general wage cut reduces worker income, which lowers demand for goods and worsens unemployment. Besides, wage cuts are socially and politically difficult due to strong trade unions and the risk of unrest.

- **No Direct Link Between Money Wages and Real Wages:** Classical economists believed that cutting money wages would proportionally reduce real wages and increase employment. Keynes showed that real wages often rise when money wages fall, due to falling prices. Thus, wage cuts do not guarantee higher employment.

- **Government Must Intervene:** Keynes believed the capitalist system needs support. He advocated for active government intervention through fiscal policies like public investment, job creation schemes, minimum wage laws, and social security, to increase demand and reduce unemployment.
- **Long-Run Assumptions Are Unhelpful:** Finally, Keynes famously said, "In the long run, we are all dead." He argued that focusing on long-term adjustments is not helpful when economies are suffering today. His theory focused on the short run, where governments can act quickly to manage demand and employment.

Keynes fundamentally changed the way we understand macroeconomics. He showed that demand drives employment, and that markets alone cannot ensure economic stability. His ideas laid the foundation for modern macroeconomic policy, including government budgeting, central bank action, and social safety nets.

Recap

- Classical theory assumes full employment, wage-price flexibility, perfect competition, and a closed economy
- Output is determined by a production function where capital and technology are fixed in the short run
- Employment increases output until diminishing returns set in, creating a natural full employment level
- Labour market equilibrium is established through the interaction of labour supply and demand, based on real wages
- Real wages adjust to eliminate unemployment or labour shortages, ensuring full employment
- Wage-price flexibility allows the economy to recover from imbalances without external intervention
- Goods market equilibrium is achieved when saving equals investment through changes in the interest rate
- Money market equilibrium is based on the Quantity Theory of Money, where price levels adjust to changes in the money supply
- Classical economists believe all markets self-correct, ensuring macroeconomic stability
- Keynes criticised classical theory for ignoring persistent unemployment, sticky wages, and insufficient demand
- He argued that savings do not always translate into investment and that money is not neutral in the short run

Objective Questions

1. What does classical theory assume about employment?
2. What determines output in the short run in classical theory?
3. What kind of economy is assumed in classical output theory?
4. What market determines employment in classical theory?
5. What happens to output when labour increases?
6. What is the shape of the marginal product of the labour curve?
7. What ensures labour market equilibrium?
8. What adjusts to restore equilibrium in the labour market?
9. What balances saving and investment?
10. What is money in the classical model?
11. What happens if saving exceeds investment?
12. What happens if investment exceeds saving?
13. Who criticised the classical model during the Great Depression?
14. What does Keynes say drives output?
15. What kind of unemployment did Keynes highlight?
16. What happens to income when saving is more than investment?
17. What does Keynes say about interest rates and investment?

Answers

1. Full employment
2. Labour
3. Closed
4. Labour market
5. Output increases
6. Downward sloping

7. Real wage
8. Wage
9. Interest rate
10. Neutral
11. Interest rate falls
12. Interest rate rises
13. Keynes
14. Demand
15. Involuntary
16. Falls
17. No direct link

Assignments

1. Explain the assumptions behind the classical theory of output and employment.
2. Using the production function, describe how output is determined in the short run.
3. Discuss the equilibrium condition in the classical labour market with a diagram.
4. What is the role of wage-price flexibility in achieving full employment?
5. How does classical theory explain goods market equilibrium?
6. Explain the Quantity Theory of Money and its role in the classical system.
7. Describe how saving and investment are brought into balance in classical economics.
8. Critically evaluate Keynes's arguments against the classical theory of employment.

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Suggested Reading

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BLOCK

Keynesian Macroeconomics

UNIT

Keynesian Macroeconomic System and Principles of Effective Demand

Learning Outcomes

After completing this unit, the learner will be able to:

- explain the core ideas of Keynesian economics, particularly the role of effective demand
- describe the Keynesian consumption function
- identify and analyse the determinants of investment

Prerequisites

During the 1930s, the world faced a severe economic depression. The result was high unemployment, low production, falling investment, business bankruptcies, and widespread poverty. During this period, Classical economic views were prevalent, but they could not solve the issue. It was in this context that Keynesian economics emerged. Keynes provided a solution by identifying that the basic reason for unemployment was a deficiency of demand. Therefore, the solution was to raise aggregate demand, with the government intervening in the market.

The government could do this by spending more money in the economy, which would change people's consumption and saving patterns. When people demand more goods, both private and government investment would rise, creating more employment opportunities. Here, we learn about how aggregate demand influences the economy and how, after raising demand, the government and private sector increase investment. We also explore the factors that determine investment and how they influence economic recovery and growth.

Keywords

Effective Demand, Consumption Function, APC, APS, MPC, MPC, Autonomous Investment, Induced Investment

Discussion

4.1.1 Keynesian Macroeconomic System

The Keynesian Macroeconomic System is based on the ideas of the renowned British economist John Maynard Keynes (1883–1946). He studied at Cambridge University and worked in the British Treasury. Keynes laid the foundation for this system through his famous book, The General Theory of Employment, Interest and Money, published in 1936. He also played a major role in shaping economic policies during and after the Great Depression and World War II.

The Great Depression was a severe worldwide economic crisis that began in 1929 and lasted through much of the 1930s. It led to a sharp decline in production, employment, and income across many countries. During this period, millions of people lost their jobs, industries shut down due to falling demand, investment dropped, consumer spending was low, and the global economy faced a deep crisis. But the Classical economic theories failed to explain or solve this downturn. Classical economists believed that markets were self-correcting and that the economy would automatically return to full employment without government intervention. They also followed Say's Law, which claimed that "supply creates its own demand"—meaning that producing goods would automatically generate enough demand to buy them.

However, in reality, demand had collapsed. People were not spending, businesses were not investing, and as a result, factories closed, unemployment increased, and the economy did not recover on its own. This clearly showed that Classical theory was not suitable for handling real-world economic crises like the Great Depression. In response, Keynes introduced a new way of thinking that emphasised the role of aggregate demand and the need for government intervention to stabilise the economy. For this contribution, he is rightly known as the Father of Modern Macroeconomics.

4.1.1.1 Features of Keynesian Theory

1. **Rejection of Say's Law :** Say's Law is a principle from Classical economics, named after the French economist Jean-Baptiste Say (1767–1832). He stated that "supply creates its own demand," meaning that the act of producing goods and services would automatically generate enough income to purchase those goods. In this view, there could never be a general oversupply or prolonged unemployment, as markets would always clear on their own. However, Keynes rejected this idea, especially in the context of the Great

Depression, where widespread unemployment and unsold goods were common. He argued that just producing goods is not enough; people must be willing and able to buy them. If demand is insufficient, goods remain unsold, firms cut down production, and unemployment rises. This clearly showed that Say's Law was not practicable in the real world. Instead of relying on supply alone, Keynes emphasised the importance of aggregate demand. He believed that to maintain full employment and stable output, demand must be actively managed.

2. **Demand-Deficient Unemployment :** Classical economists believed that unemployment was mainly caused by high wages or a lack of worker skills. However, Keynes argued that the primary reason for unemployment is insufficient demand for goods and services in the economy. When businesses cannot sell their products due to low demand, they reduce production and lay off workers, causing unemployment to rise. Therefore, economic activity and employment depend largely on the level of demand in the economy.

3. **Role of Government Intervention :** Classical economists believed that markets are always self-correcting and that the economy would naturally return to full employment without government help. However, Keynes argued that waiting for the market to fix itself could take too long and cause prolonged unemployment. Therefore, he strongly believed that the government must actively intervene in the economy during periods of low demand or recession to restore economic stability. For example, during a depression, the government can use fiscal policy to correct the situation. This involves changing government spending and taxation to influence overall demand. Increasing government spending or cutting taxes can raise demand and stimulate economic activity. Through such actions, the government can help close the gap between supply and demand, reduce unemployment, and support economic growth during downturns.

4. **Sticky Wages and Prices :** Keynes observed that wages and prices are sticky, which means they do not adjust quickly when there are changes in demand. For example, if demand for goods falls and businesses need to reduce costs, they may want to lower wages or cut prices. However, wages often do not fall easily because workers resist pay cuts, and prices may stay the same due to contracts or fear of losing customers.

   As a result, instead of wages and prices adjusting to restore balance, the economy can remain stuck in a state of disequilibrium where supply does not equal demand. This causes unemployment to persist for a long time. To solve this problem, government intervention is often needed. For example, the government can increase spending or cut taxes to raise demand in the economy. When demand goes up, businesses sell more products and can afford to keep more workers, even if wages do not fall. This helps reduce unemployment without needing wages or prices to change immediately.

5. **The Multiplier Effect :** Keynes introduced the idea of the multiplier effect, which means that an initial increase in spending can lead to a much larger increase in the total income of the economy. For example, if the government builds a road, the workers who build the road get paid. These workers then

spend their income in shops and businesses. As shops earn more money, they can hire more workers or buy more goods. Those new workers and businesses also spend their income, and this process continues. Because of this chain reaction, the total increase in income and demand in the economy is much larger than the original spending by the government. This is why government spending can have a strong effect on economic growth.

6. **Keynes Focus on the Short Run :** Keynes focused on the short run because he wanted to understand and solve immediate economic problems like unemployment and low output during a crisis, such as the Great Depression. In the short run, the economy can get stuck with unused resources, especially unemployed workers, and it does not quickly fix itself. Classical economists believed the economy would always return to full employment on its own, but Keynes saw that this was not true for the short term.

By focusing on the short run, Keynes aimed to show how government actions could help increase demand quickly, create jobs, and bring the economy back to normal faster. His ideas are especially useful during recessions and depressions when waiting for the economy to fix itself would take too long and cause great hardship.

4.1.2 Principles of Effective Demand (ASF and ADF)

The Principle of Effective Demand is the foundation of Keynes's theory of employment. Keynes argued that in a capitalist economy, the level of employment is not determined by supply alone, but by the level of effective demand, so the solution lies in raising effective demand to boost both employment and output.

Keynes used the term 'Effective Demand' to refer to the total demand for goods and services at different levels of employment. As employment increases, both consumption and investment rise, which leads to an increase in total demand. That is, effective demand occurs where aggregate demand equals aggregate supply. That is

Aggregate Demand (AD)=Aggregate Supply (AS)

To understand this better, we need to look at two important terms:

4.1.2.1 Aggregate Demand

Aggregate Demand refers to the total demand for goods and services in an economy at a given level of income or employment. It includes the combined demand for consumption and investment goods from households, businesses, and the government. While studying Keynesian theory of employment, we focus on a related concept known as the Aggregate Demand Price. The Aggregate Demand Price is the amount of money that entrepreneurs expect to receive from the sale of output produced at a particular level of employment. For example, if 30 lakh workers are employed and the expected sale value of the output produced by them is ₹250 crores, then ₹250 crores is the aggregate demand price at that level of employment.

This leads us to the concept of the Aggregate Demand Function. It is a schedule or curve that shows the aggregate demand prices corresponding to different levels of employment. It explains how expected revenue (demand price) changes as employment changes. Mathematically, it is written as:

$$D = f(N)$$

Where:

- D = Aggregate demand price (expected proceeds)
- N = Number of workers employed (level of employment)

Let us now explain this concept with the help of a figure or diagram showing the aggregate demand curve.

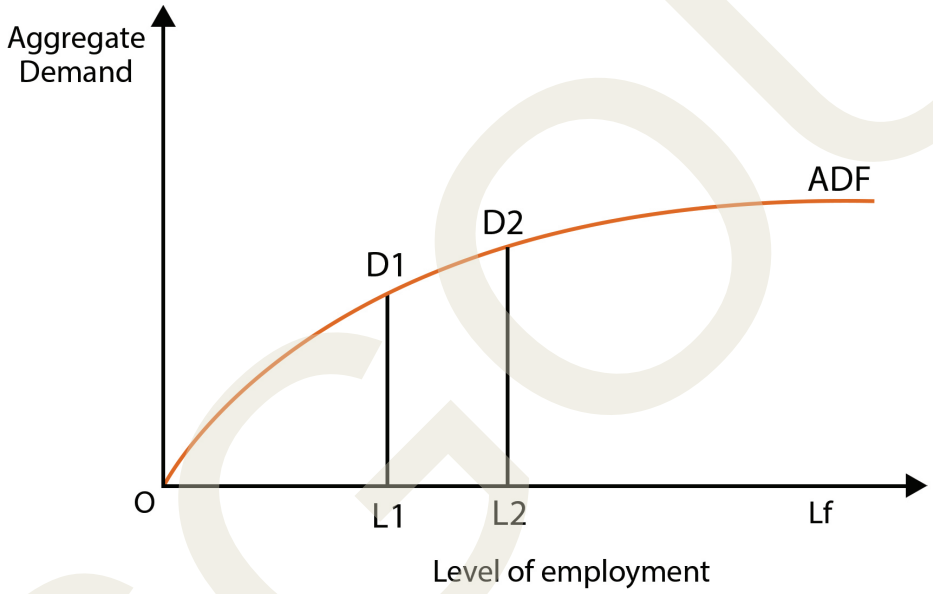

Fig. 4.1.1 Aggregative Demand Curve

On the X-axis, we measure the level of employment, while on the Y-axis, we measure the aggregate demand price. The aggregate demand curves D1 and D2 represent two different levels of aggregate demand, with employment levels denoted by L1 and L2. As employment increases from L1 to L2, the aggregate demand price also rises (as shown by the shift from D1 to D2), but at a diminishing rate.

This behaviour reflects the shape of the aggregate demand curve, which slopes upward from left to right, indicating a positive relationship between employment and aggregate demand price. However, the curve becomes flatter at higher employment levels because, as income rises, people tend to save a larger portion of their earnings and spend proportionally less on consumption goods. As a result, although total spending increases, it does so more slowly, causing the aggregate demand curve to flatten as employment rises.

4.1.2.2 Aggregate Supply

In Keynesian economics, the Aggregate Supply Price refers to the minimum amount of proceeds that entrepreneurs must expect to receive from selling the output produced at a particular level of employment. When an entrepreneur hires labour, they also need to employ co-operant factors such as land, capital, and raw materials. All these inputs require payment, including normal profits for the entrepreneur. Hence, each level of employment in the economy is associated with a specific cost of production, and the entrepreneur will only be willing to employ labour if these costs are expected to be recovered through sales.

This leads to the concept of the Aggregate Supply Function, which is a schedule or curve showing the minimum expected proceeds required to induce different levels of employment in the economy. As employment increases, the aggregate supply price also increases because higher output requires more resources and greater costs. Mathematically, Keynes expressed it as:

$$Z = \phi(N)$$

Where:

- Z = Aggregate Supply Price (minimum expected receipts)
- N = Level of employment. Let us explain with the help of figures:

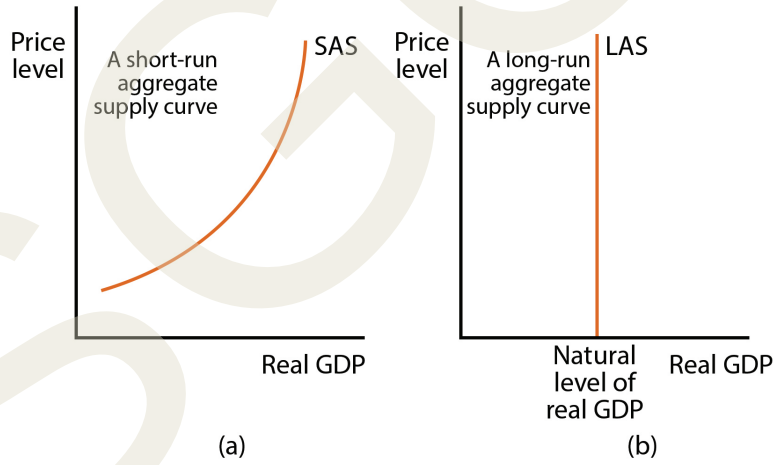

Fig. 4.1.2 Aggregative Supply Curve

The Aggregate supply curve, based on this function, slopes upward from left to right in the short run, indicating that to employ more workers, entrepreneurs must expect higher receipts. However, once the economy reaches full employment, the aggregate supply curve becomes vertical to the X-axis. This indicates that beyond this point, no

additional employment is possible even if entrepreneurs expect higher receipts because all available resources are fully utilised. This vertical portion of the curve reflects the economy's maximum or potential GDP in the long run. Thus, the Aggregate Supply Function plays a crucial role in determining how much employment and output producers are willing to offer based on cost conditions and expected revenue, especially under Keynes's theory of effective demand.

4.1.2.3 Determination of Effective Demand

We see that the Aggregate Supply Schedule reflects the costs involved at each possible level of employment, while the Aggregate Demand Schedule shows the expected receipts or proceeds that entrepreneurs hope to earn at those same levels. As long as the expected receipts (aggregate demand price) exceed the necessary costs (aggregate supply price), entrepreneurs are encouraged to expand production and employment. This expansion continues until aggregate demand equals aggregate supply, where entrepreneurs' expectations match the minimum required proceeds. This intersection point is known as the point of Effective Demand, and it determines the equilibrium level of employment. Let us now explain this concept with the help of a figure.

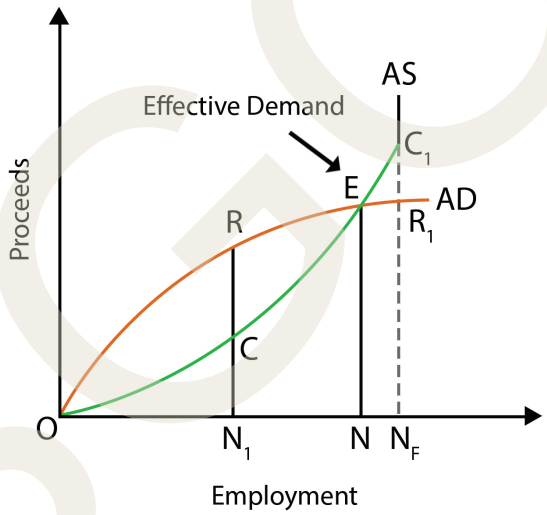

Fig. 4.1.3 Effective demand Curve

The AD curve represents Aggregate Demand, and the AS curve represents Aggregate Supply. These two curves intersect at point E, which is known as the point of Effective Demand, where ON workers are employed. At this level of employment, entrepreneurs' expectations of profits are maximised, as the proceeds they expect to receive exactly match the costs they must cover.

At any other level of employment, entrepreneurs will either incur losses or earn subnormal profits. For example, at a lower level of employment such as ON_1, the expected proceeds (RN_1) are greater than the necessary proceeds (CN_1). This makes it

profitable for entrepreneurs to expand employment. They will continue to do so until they reach ON, where revenue and cost are equal, and profits are maximised. However, beyond this point, say at N_F level of employment, the necessary costs (C_1N_F) exceed the expected returns (R_1N_F), **i.e., $C_1N_F > R_1N_F$**. This makes it unprofitable for entrepreneurs to further expand employment. Thus, point E determines the actual level of employment in the economy. According to Keynes, this is typically a state of underemployment equilibrium, not full employment.

In Keynesian theory, the economy often operates at a point of underemployment equilibrium, where the level of employment (point E) is less than full employment. At this point, although entrepreneurs are maximising expected profits, not all available labour and resources are being fully utilised. To move the economy from underemployment to full employment, it is necessary to raise the level of effective demand. Since the aggregate supply function is considered fixed in the short run due to technical constraints, the key solution lies in increasing the Aggregate Demand (AD) function. This can be done by increasing consumption expenditure, investment expenditure, or both. Let us explain with the help of the following figure.

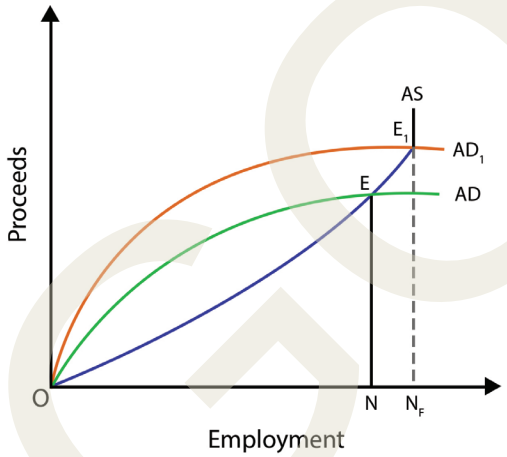

Fig. 4.1.4 Employment

When the AD curve shifts upward to a new position (say AD_1), it intersects the AS curve at a new point (E_1), leading to a higher level of employment (ON_f)—representing full employment. However, if aggregate demand continues to increase beyond full employment, the economy may face inflation, as shown by the vertical portion of the AS curve, where output can no longer be expanded in the short run.

4.1.3 Consumption

Consumption refers to the use of goods and services by households to satisfy their needs and wants. It includes everyday spending on items like food, clothing, rent, electricity, transportation, and entertainment. Consumption is influenced by various subjective and objective factors, among which income is a crucial determinant. A key question in economics is: "If a person's income changes, how much will their consumption change?" To answer this, economists use the concept of the consumption function. The consumption function is a mathematical or graphical representation that

shows how consumption changes in response to changes in income. In other words, it explains the relationship between consumption and income. This relationship can be written as

$$C = f(y)$$

Where C is the consumption, Y is income. There are two main types of consumption functions:

1. **Linear Consumption Function**
2. **Non-Linear Consumption Function**

4.1.3.1 Linear Consumption Function

A linear consumption function assumes a straight-line relationship between consumption and income. This was the form proposed by Keynes in the short run.

It can be expressed as:

$C = a + bY$

Where:

- **C** = Total Consumption
- **a** = Autonomous consumption (consumption when income is zero)
- **b** = Marginal Propensity to Consume (MPC)
- **Y** = Income

This equation shows that total consumption is made up of two components:

1. **Autonomous Consumption (a):** This is the consumption that occurs even when income is zero. People meet their basic needs through borrowings or savings.
2. **Induced Consumption (bY):** This is the part of consumption that changes with income. The term MPC (Marginal Propensity to Consume) (b) represents how much of additional income is spent on consumption.

As income (Y) increases, total consumption (C) also increases, and the increase is proportional, depending on the value of b (MPC). Let us explain with the help of figure

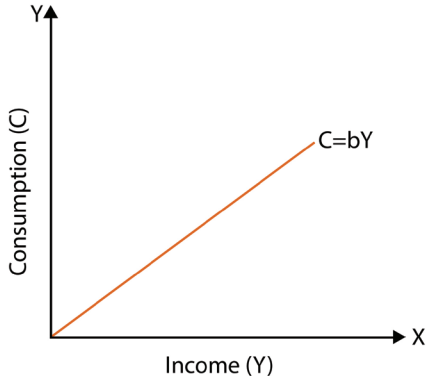

Fig. 4.1.5 Linear Consumption Curve

In the graph of a linear consumption function, income (Y) is represented on the X-axis, and consumption (C) is represented on the Y-axis. The consumption curve begins from a point above the origin on the Y-axis, marked as 'a', which represents autonomous consumption—the level of consumption even when income is zero. The curve is a straight line with a positive slope, where the slope equals the marginal propensity to consume (MPC). A 45-degree line can also be drawn from the origin to represent all points where consumption equals income. The gap between the consumption curve and the 45-degree line indicates the level of saving or dissaving. When the consumption curve lies below the 45-degree line, it shows savings (income > consumption), and when it lies above, it indicates dissaving (consumption > income).

4.1.3.2 Non-Linear Consumption Function

In the case of a non-linear consumption function, as income increases, consumption also increases, but not at a constant rate. This reflects a more realistic view of consumer behaviour, especially in the long run. A non-linear consumption function assumes a curved relationship between consumption and income. It can be expressed using equations such as:

$C=aY^b$

- C = Consumption
- Y = Income
- a = A constant showing the level of consumption for a given level of income
- b = The elasticity of consumption with respect to income, or the income response rate

Meaning:

- If b = 1, then consumption increases proportionally with income (linear case).
- If b < 1, consumption increases with income, but at a decreasing rate (non-linear).
- If b > 1, consumption increases faster than income (which is rare in practice).

This form is also used to represent non-linear, realistic patterns of consumer behaviour.Let us now explain this with the help of a figure.

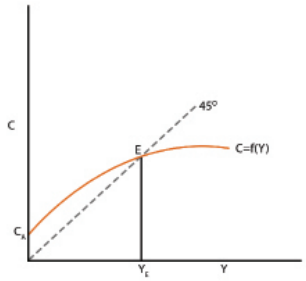

Fig. 4.1.6 Nonlinear Consumption Curve

The X-axis represents Income (Y), and the Y axis represents Consumption (C). A 45-degree line is drawn from the origin (0, 0) in the graph. This straight line represents all points where consumption equals income (C = Y). The non-linear consumption curve begins above the origin on the Y-axis, indicating autonomous consumption. The curve is upward-sloping, which shows that consumption increases as income increases. However, this curve is bent and concave to the X-axis. This curved shape means that the rate of increase in consumption slows down as income rises, reflecting a declining marginal propensity to consume (MPC). At lower income levels, the curve is steeper, indicating a high MPC. As income continues to rise, the curve becomes flatter, showing that MPC falls and a larger share of income is saved.

4.1.3.3 Technical Properties of the Consumption Function

Keynes identified some important technical characteristics of the consumption function:

1. **Average Propensity to Consume (APC) :** Average Propensity to Consume (APC refers to the ratio of total consumption expenditure (C) to total income (Y). It indicates the proportion of income that is spent on consumption. The formula for APC is:

$$APC = C/Y$$

As income increases, APC generally decreases, because individuals tend to save a larger share of their income. APC can take different values depending on spending behaviour:

- APC is greater than 1 when people spend more than their income (dissaving).
- APC is equal to 1 when all income is spent, with no savings.
- APC is less than 1 when a portion of income is saved.

2. **Marginal Propensity to Consume (MPC) :** Marginal Propensity to Consume (MPC) refers to the ratio of the change in consumption (ΔC) to the change in income (ΔY). It measures how much of an additional rupee of income is spent on consumption. The formula for MPC is:

$$MPC = \Delta C / \Delta Y$$

This concept helps in understanding how people adjust their spending when their income changes. The value of MPC lies between 0 and 1. If MPC = 1, it means the entire additional income is spent on consumption. If MPC = 0, the entire additional income is saved. In practical situations, MPC usually declines as income increases, because higher-income individuals tend to save a greater portion of their extra income.

3. **Average Propensity to Save (APS)** : Average Propensity to Save (APS) is the ratio of total saving (S) to total income (Y). It shows the portion of income that is not spent on consumption and is instead saved. The formula for APS is:

$$\boldsymbol{APS = S/Y}$$

As income increases, APS tends to increase, because individuals are usually able to save a greater portion of their income. However, APS can also be negative if there is dissaving, meaning that a person is spending more than their income, often by borrowing or using previous savings.

4. **Marginal Propensity to Save (MPS)** : Marginal Propensity to Save (MPS) refers to the ratio of the change in saving (ΔS) to the change in income (ΔY). It shows how much of an additional rupee of income is saved rather than spent on consumption. The formula for MPS is:

$$MPS = \Delta S / \Delta Y$$

The value of MPS always lies between 0 and 1. If a person saves all of their additional income, MPS = 1. If they save none of it, MPS = 0. There is a direct relationship between MPC and MPS—as MPC decreases, MPS increases, because the portion of income not spent is saved. Together, they satisfy the condition:

$$MPC + MPS = 1$$

4.1.3.4 Determinants of the Consumption Function

The consumption function shows the relationship between consumption and income, but income is not the only factor influencing consumption. There are several other factors that determine the level of consumption in an economy. These can be broadly classified into two categories:

1. **Subjective Factors (Psychological or Internal Factors) :** These are non-measurable and are based on individual or collective behaviour, attitudes, and preferences. They are internal to households and tend to remain stable in the short run.

Key Subjective Factors:

- Desire for security: People save for emergencies, illness, or old age, reducing current consumption.
- Social status and habits: Some individuals spend more to maintain a certain lifestyle or status.
- Precautionary motives: Fear of unemployment, income uncertainty, or future crises can reduce consumption.
- Cultural and family values: Traditional values, upbringing, and family expectations influence spending habits.
- Time preference: Some people prefer immediate consumption, while others delay it for future benefits.

These factors shape an individual's willingness to consume or save, regardless of income level.

2. **Objective Factors (Economic or External Factors) :** These are measurable and external to individuals or households. They often change with economic conditions and influence the consumption function in both the short and long run.

Key Objective Factors:

- Income level: Higher income generally leads to higher consumption, though not proportionately.
- Distribution of income: More equal distribution leads to higher overall consumption, as lower-income groups tend to consume more.
- Wealth: Higher accumulated wealth (like property, shares) may increase confidence and consumption.
- Availability of credit: Easy access to loans or instalment schemes encourages people to spend more.
- Interest rates: Higher interest rates discourage borrowing and consumption; lower rates encourage them.
- Taxation policy: High taxes reduce disposable income and consumption; tax cuts increase them.
- Price level (inflation): Rising prices reduce real income and consumption; falling prices may boost consumption.
- Expectations about the future: Optimism about the economy or job prospects can increase consumption; pessimism can reduce it.
- Government spending and transfers: Subsidies, pensions, and welfare benefits increase people's purchasing power.

Both subjective and objective factors influence the consumption behaviour of individuals and households. While income remains the most important determinant,

other psychological and economic factors also play a crucial role in shaping the consumption function.

4.1.3.5 Keynesian Psychological Law of Consumption

John Maynard Keynes introduced the Psychological Law of Consumption in his book *"The General Theory of Employment, Interest and Money"* (1936). This law explains how consumption changes with changes in income, based on psychological tendencies observed in human behaviour. The Keynesian Psychological Law of Consumption states that as income increases, consumption also increases, but not by as much as the increase in income. In other words, people spend a part of their additional income and save the rest.

Propositions of the Law

1. **Consumption increases, but not fully :** When income rises, people spend more—but the increase in spending is less than the increase in income. Example: If income increases by ₹1000, consumption might increase by only ₹800.

2. **Extra income is divided between consumption and saving :** Since people do not spend all of their additional income, the remaining amount is saved. So, both consumption and saving go up when income increases.

3. **Both consumption and saving increase together :** As income grows, both consumption and saving increase, but at different rates. Consumption goes up slowly, and saving goes up faster.

4.1.4 Investments

In economics, investment refers to the expenditure incurred on creating new capital assets like buildings, machines, tools, raw materials, roads, factories, etc. This leads to an increase in the productive capacity of the economy. For instance:

- A company buying a new machine for production.
- The government building a new highway.

Investment is influenced by various factors, especially income and profit expectations. So, the relationship between income and investment is known as the Investment Function. It helps economists understand how changes in income or interest rates affect the level of investment in the economy.

4.1.4.1 Types of Investment

On the basis of the motive behind investment, it can be divided into two types:

1. Induced Investment
2. Autonomous Investment

1. **Induced Investment :** Induced Investment refers to the type of investment that is directly influenced by the level of income and profit expectations in an economy. It is mainly undertaken by the private sector with the motive of earning profit. As the income of individuals and businesses increases, their spending capacity also rises, leading to greater demand for goods and services. To meet this rising demand, producers invest more in capital assets like machinery, tools, and buildings. Hence, induced investment is said to be income elastic, meaning it increases with an increase in income and decreases when income falls. This type of investment is a key driver of economic growth during periods of rising national income, as it boosts production and employment opportunities.

Let us explain with the help of a figure:

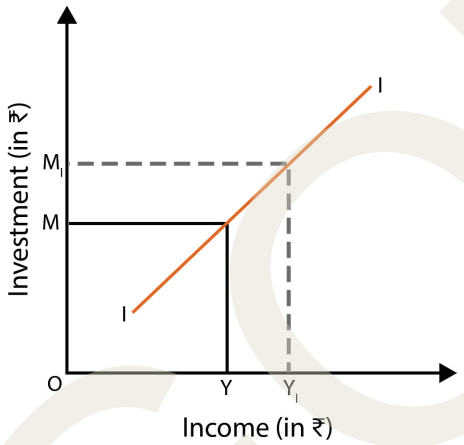

Fig: 4.1.7 Induced Investment Curve

In the case of Induced Investment, the graph typically represents income on the X-axis and investment on the Y-axis. The induced investment curve slopes upward, indicating a positive relationship between income and investment.

2. **Autonomous Investment :** Autonomous Investment refers to investment that is made irrespective of the level of income in the economy. It does not depend on income or profit expectations and is usually undertaken for social welfare or public benefit rather than for earning profits. This type of investment is commonly made by the government sector in areas such as infrastructure development, public health, education, and other essential services. Since it remains constant even when income changes, it is considered income inelastic. For example, the government may invest in building a railway line or a hospital in a rural area regardless of whether the national income is high or low.

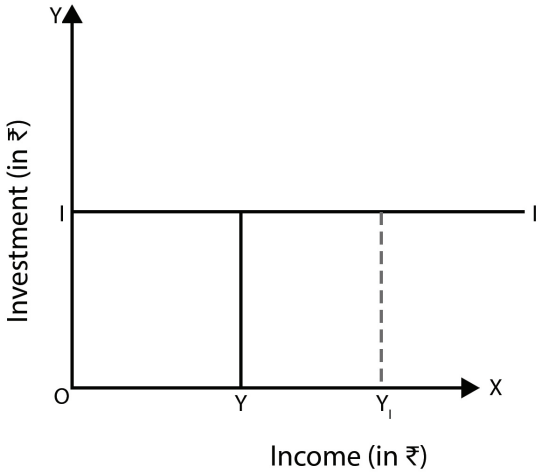

Fig. 4.1.8 Autonomous Investment

In a graph where the X-axis represents income and the Y-axis represents investment, the autonomous investment curve appears as a horizontal line, showing that investment remains constant regardless of changes in income. This form of investment is vital for building the basic framework for long-term economic development, especially in underdeveloped regions where private investment is often lacking.

4.1.4.2 Determinants of Investment

In macroeconomics, particularly in Keynesian theory, investment decisions depend on specific economic factors. Among these, the most important determinants are:

1. **Marginal Efficiency of Capital (MEC) :** The Marginal Efficiency of Capital (MEC) refers to the expected rate of return from a capital asset over its useful life. It helps a firm decide whether investing in a particular capital good such as machinery, equipment, or buildings is worthwhile. MEC is calculated using the formula:

   Two key elements are essential in determining MEC. The first is the Supply Price, which is the cost of purchasing or producing the capital asset. The second is the Prospective Yield, which refers to the net return expected from the asset over its operational life. For example, if a machine costs ₹1,00,000 and is expected to generate a net return of ₹12,000 per year, then the MEC is calculated as:

   This indicates that the firm can expect a 12% return on its investment in the machine. Firms generally compare the MEC with the Rate of Interest to decide whether the investment is profitable.

2. **Marginal Efficiency of Investment (MEI) :** The Marginal Efficiency of Investment (MEI) refers to the expected rate of return from an additional unit of total investment. It represents the overall return that firms anticipate from expanding their level of investment in capital goods. Like MEC, MEI also depends on two key factors:

Supply Price – the cost of acquiring or producing the new capital asset.

Prospective Yield – the expected net return from the asset over its lifetime.

For example, suppose a firm invests ₹20,000 in new equipment. It expects to earn ₹2,500 in gross returns, with ₹500 in operating expenses. The net return would be ₹2,000. Then, the MEI is calculated as:

$$\text{MEI} = \left(\frac{2,000}{20,000}\right) \times 100 = 10\%$$

This means the firm expects a 10% return on its new investment. There is an important relationship between MEI and the volume of investment: as investment increases, MEI tends to fall due to the law of diminishing returns. Therefore, firms will continue to invest until the MEI becomes equal to the Rate of Interest. At that point, further investment is no longer profitable.

3. Rate of Interest (ROI) : The Rate of Interest (ROI) refers to the cost of borrowing capital or the reward for lending capital. It plays a crucial role in influencing the level of investment in an economy. There is an inverse relationship between the rate of interest and investment:

   - When the rate of interest is high, borrowing becomes expensive, and therefore, investment decreases.
   - When the rate of interest is low, borrowing becomes cheaper, which encourages businesses to invest more.

Firms make investment decisions by comparing the expected return (measured by MEC or MEI) with the rate of interest. Investment is undertaken only when the expected return is greater than the cost of borrowing. Thus, the rate of interest acts as a key determinant of investment by influencing the profitability of investment projects.

Table 4.1.1 Comparison Table of MEC, MEI and Rate of Interest

Concept	Meaning	Focus	Used For	Investment Condition
MEC	Return from a specific capital asset	Capital asset	Individual investment decisions	Invest if MEC > ROI
MEI	Return from total/additional investment	Overall investment	Aggregate investment planning	Invest if MEI > ROI
Rate of Interest (ROI)	Cost of borrowing money	Loan/credit market	Influences volume of investment	Higher ROI → Lower Investment

Recap

- The Keynesian system highlights that employment and output depend on effective demand rather than just supply
- The principle of effective demand explains that equilibrium is achieved when aggregate demand equals aggregate supply
- Government intervention is necessary to correct demand deficiency and reduce unemployment during recessions
- The consumption function shows the relationship between income and consumption, and it is influenced by the marginal propensity to consume (MPC)
- Autonomous investment is made independently of income or profit expectations and is often undertaken for social welfare or public benefit
- Public sector spending on infrastructure, healthcare, and essential services is a key example of autonomous investment
- The Marginal Efficiency of Capital (MEC) refers to the expected return from a specific capital asset
- The Marginal Efficiency of Investment (MEI) refers to the expected return from overall additional investment in the economy

Objective Questions

1. Who is called the Father of Modern Macroeconomics?
2. What is the basic condition for equilibrium in Keynesian theory in terms of demand and supply?
3. What is the sum of MPC and MPS according to Keynesian theory?
4. What does the consumption function represent?
5. According to Keynes, what is the main cause of unemployment during a depression?
6. What does the aggregate demand function show?

7. What is autonomous investment?
8. Give one example of autonomous investment.
9. What does MEC stand for in Keynesian theory?
10. What is the relationship between autonomous investment and income level?
11. What is the role of the rate of interest in investment decisions?
12. Which type of investment depends on the level of income — autonomous or induced?

Answers

1. John Maynard Keynes
2. Aggregate demand equals aggregate supply (AD = AS)
3. MPC + MPS = 1
4. The relationship between income and consumption
5. Deficiency of aggregate demand
6. The expected proceeds at different levels of employment
7. Investment made independently of income or profit expectations
8. Government spending on infrastructure
9. Marginal Efficiency of Capital
10. It does not depend on the level of income
11. It affects the cost of borrowing and influences investment
12. Induced investment

Assignments

1. Explain how the principle of effective demand determines the level of employment in the Keynesian system.

2. Discuss the role of government intervention in overcoming demand-deficient unemployment according to Keynesian economics.

3. Differentiate between autonomous investment and induced investment with suitable examples.

4. Describe the relationship between income, consumption, and saving using the consumption function.

5. What are the technical properties of the consumption function? Explain the concepts of APC, MPC, APS, and MPS.

6. Explain how MEC, MEI, and the rate of interest determine investment decisions in the Keynesian model.

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UNIT 2

Keynesian Income Determination and Fiscal Multiplier

Learning Outcomes

After completing this unit, the learner will be able to:

- analyse the structure and functioning of the simple Keynesian model of income determination
- understand and interpret the investment multiplier
- apply the concepts of the tax multiplier and balanced budget multiplier

Prerequisites

We know that in recent times, economies around the world, including India, have faced slowdowns due to global shocks such as the COVID-19 pandemic, geopolitical tensions, and weak private sector confidence. These conditions have led to declines in investment and consumer spending, resulting in lower national income, high unemployment, and widening inequalities.

To stimulate the economy, governments seek ways to boost aggregate demand and output. This raises the question: How can these issues be addressed? In this context, the investment multiplier, tax multiplier, and balanced budget multiplier offer useful strategies for policymakers. These tools explain how changes in investment, government spending, or taxes can produce a multiplied effect on national income, helping to recover lost output and create employment, without having to wait for private sector confidence to return.

Keywords

Aggregate Demand, National Income, Investment Multiplier, Tax Multiplier, Balanced Budget Multiplier, Leakages, Injection

Discussion

4.2.1 The Simple Keynesian Model (Income Determination in a Two-Sector Model)

The simple Keynesian model of income determination is a fundamental concept in macroeconomics that explains how aggregate demand determines the level of economic activity. The determination of the level of national income in the two-sector economy is based on the assumption that a two-sector economy is one where there is no intervention from the government and no foreign trade. The following are the assumptions of the model:

Assumptions

1. It is a two-sector economy where only consumption and investment expenditures take place. Thus, the total output of the economy is the sum of consumption and investment expenditure
2. Investment relates to net investment after deducting depreciation
3. It is a closed economy in which there are no exports or imports
4. There are no transfer payments
5. There is no government
6. There is autonomous investment
7. The economy is at less than full employment level of output
8. The price level remains constant up to the level of full employment
9. The money wage rate is constant
10. There is a stable consumption function
11. The rate of interest is fixed
12. The analysis relates to the short period

In the Keynesian model, the equilibrium level of output is determined when total output (Y) is equal to aggregate demand (E). Aggregate demand consists of household consumption (C) and investment (I), so this condition can be written as:

$$Y = C + I$$

National income (Y) is divided between consumption (C) and saving (S), giving the identity

$$Y = C + S.$$

At equilibrium, planned saving is equal to planned investment, or $S = I$. This shows that aggregate demand equals aggregate supply.

In other words, when $Y = E, or\ C + S = C + I$, it simplifies to the condition $S = I$.

Since saving represents a leakage from the circular flow of income, and investment represents an injection into the income stream, equilibrium requires that leakages (S) equal injections (I). Therefore, the equilibrium condition can be expressed in any of the following forms:

$$Y = C + I, S = I, or\ leakages = injections.$$

This forms the basic algebraic condition for equilibrium in the Keynesian system.

In the Keynesian model, equilibrium income can be derived using either the income–expenditure approach or the saving–investment approach. Let us explain

1. Income–Expenditure Approach

In the income–expenditure approach is also called the AD = AS approach. In this approach the equilibrium condition is given by

$$Y = C + I.$$

Since consumption is defined as $C = a + bY$ and investment is exogenous ($I = \bar{I}$),

substituting these gives

$$Y = a + bY + \bar{I}.$$

Solving for Y, we get the equilibrium income as

$$Y_e q = (1 / (1 - b))\,(a + \bar{I}).$$

2. Saving–Investment Approach

In the saving–investment approach, equilibrium requires S = I. Since saving is the difference between income and consumption, we write

$$S = Y - C, or\ S = Y - (a + bY),$$

which simplifies to $S = -a + (1 - b)Y$.

Setting this equal to planned investment, $-a + (1 - b)Y = \bar{I}$,

and solving for Y, we again get

$$Y_e q = (1 / (1 - b))(a + \bar{I}).$$

Thus, in both cases, equilibrium income is equal to the multiplier (1 / (1 – b)) times the sum of autonomous consumption (a) and exogenous investment ($\bar{I}$).

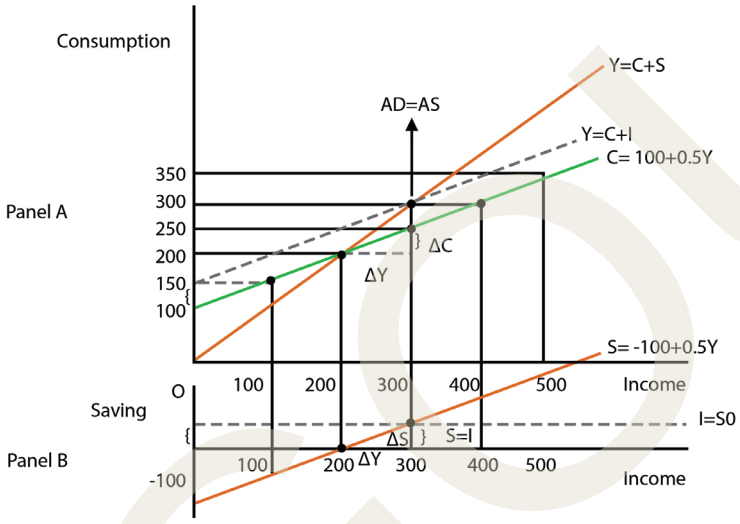

Fig: 4.2.1 Income Determination in a Two Sector

The Equality of AD and AS (Panel A)

The equilibrium level of national income is determined at a point where the aggregate demand function (C+I) intersects the aggregate supply function (C+S). The aggregate demand function is drawn by adding to the consumption function C and the investment demand I. The 45° line represents the aggregate supply function, Y = C+S. The aggregate demand function C+I intersects the aggregate supply function Y = C+S at an income level of 300, and the equilibrium level of income is determined.

Suppose there is disequilibrium in the aggregate supply and aggregate demand of the economy. First, take the case when aggregate supply exceeds aggregate demand. This is shown by the level of income, 400. At this level of income, aggregate supply is 400 and AD is 350. Therefore, AS is more than AD by 50. The surplus output of goods worth 50 is accumulated by businessmen in the form of unintended inventories. The second situation of disequilibrium, when aggregate demand exceeds aggregate supply, is shown by the income level of 200. At this level, AD is 250, which is greater than the aggregate supply of goods by 50. To meet this excess demand worth 50, businessmen will have to reduce inventories by this amount.

Equality of Saving and Investment (Panel B)

The equilibrium level of income can also be shown by the equality of the saving and investment functions. The saving and investment functions intersect, which determines the equilibrium level of income of 300. If there is disequilibrium in the sense of inequality between saving and investment, forces will operate in the economy and the equilibrium position will be restored. At the 400 level of income, saving exceeds investment by 50. It means that people are consuming less. Thus, aggregate demand is less than aggregate supply. This will lead to the accumulation of unintended inventories with businessmen. To avoid further accumulation of inventories, businessmen will reduce production. Consequently, output, income, and employment will be reduced until the equilibrium level of income OY is reached at the point where S = I.

4.2.2 Multiplier

The multiplier theory is a foundational concept in modern macroeconomics. It was first introduced by R.F. Kahn (1931) and later developed by J.M. Keynes. Keynes's version, known as the Income or Investment multiplier, explains how a change in investment causes a greater cumulative change in income through consumption. The concept is vital in understanding income generation, employment creation, and in guiding economic policy decisions.

The investment multiplier (k) refers to the ratio of the final change in income (ΔY) to the initial change in investment (ΔI). It shows how a small increase in investment leads to a multiplied increase in national income. Mathematically, it is expressed as:

$$k = \frac{\Delta Y}{\Delta I}$$

When using the Marginal Propensity to Consume (MPC), the formula becomes:

$$k = \frac{1}{1 - MPC} \quad \text{or} \quad k = \frac{1}{MPS}$$

For example, if MPC = 4/5, then MPS = 1/5, and the value of k = 5. Suppose Rs. 100 crore is invested and national income increases to Rs. 400 crore, then the multiplier is:

$$k = 400/100 = 4$$

Assume MPC = 4/5 and initial investment = Rs. 1000 crore. This investment initially increases income by Rs. 1000 crore. Out of this, Rs. 800 crore is spent (as MPC is 0.8), and Rs. 200 crore is saved. The Rs. 800 crore spent becomes income for others, who again spend 80% of it (i.e., Rs. 640 crore), and this process continues. Through repeated rounds of spending, the total income in the economy eventually rises to Rs. 5000 crore, demonstrating a multiplier value of 5.

Leakages in the Multiplier Process

The multiplier effect assumes that all additional income will be spent, generating further income in the economy. However, in reality, certain factors reduce or "leak" out part of this income, lowering the actual value of the multiplier. These are called leakages.

Major Leakages in the Multiplier Process

1. **Savings (S):** A portion of income is not spent but saved, which stops the flow of income in the economy.

2. **Repayment of Debts:** People may use income to repay old loans instead of spending it on goods and services.

3. **Idle Cash Holdings:** When individuals hold cash without spending, the multiplier chain breaks.

4. **Imports (M):** If people buy foreign goods, the money leaves the domestic economy and does not contribute to domestic income or production.

5. **Taxation:** Taxes reduce disposable income, leaving less money for consumption, which lowers the multiplier effect.

6. **Rising Prices (Inflation):** Inflation reduces the real purchasing power, so even if people have more income, they may not be able to buy more goods and services.

7. **Purchase of Old Stocks or Securities:** Buying old shares, land, or second-hand goods does not create new production, so it does not contribute to new income generation.

These leakages reduce the efficiency of the multiplier by limiting how much income is re-spent in the economy. Policymakers must account for these leakages when using multiplier-based strategies to boost income, employment, and output.

4.2.3 Fiscal Multiplier

The fiscal multiplier measures how much national income (or GDP) changes when the government changes its spending or taxation. It shows how one rupee of government spending or tax change leads to a larger change in national income through repeated rounds of spending in the economy. Mainly, there are two types of fiscal multipliers:

- Tax Multiplier
- Balanced Budget Multiplier

4.2.3.1 Tax Multiplier

The tax multiplier measures the change in national income (GDP) resulting from a change in taxes. It works indirectly by influencing disposable income, which then affects consumer spending. When the government reduces taxes, people have more income to spend, leading to increased consumption, higher output, and a rise in national income. Conversely, when taxes are increased, disposable income falls, reducing consumption and thereby decreasing income and output. The formula for the tax multiplier is:

$$\text{Tax Multiplier (TM)} = \frac{\Delta Y}{\Delta T} = \frac{-MPC}{1 - MPC}$$

Where ΔY is the change in GDP, ΔT is the change in taxes, and MPC is the marginal propensity to consume. The value of the tax multiplier is always negative, since a tax increase lowers income while a tax cut boosts it. For example, if MPC = 0.8 and the government cuts taxes by ₹100 billion, the tax multiplier would be:

$$TM = \frac{-0.8}{1 - 0.8} = -4$$

$$\Delta Y = -4 \times (-100) = +₹400 \text{ billion}$$

This means a ₹100 billion tax cut can potentially increase GDP by ₹400 billion, assuming no other changes in the economy.

4.2.3.2 Balanced Budget Multiplier (BBM)

The balanced budget multiplier refers to the change in national income (GDP) resulting from an equal increase in government spending and taxation. According to Keynesian economics, even when the government raises taxes and spending by the same amount, the overall impact on the economy is still positive. This is because government spending injects the entire amount into the economy, while increased taxes reduce consumer spending by only a part of it (based on the Marginal Propensity to Consume, or MPC). Therefore, the net effect is an increase in aggregate demand, leading to higher income and output.

The value of the balanced budget multiplier is always equal to 1, meaning that if both government spending and taxes rise by ₹1,000 crore, GDP will also increase by ₹1,000 crore. This multiplier works only under certain assumptions: the economy should have idle resources (unemployment), constant MPC, and the government must spend efficiently and immediately. It also assumes no time lags and that people do not completely offset the tax increase by cutting back all their spending.

For example, if the government increases both spending and taxes by ₹1,000 crore, and the MPC is 0.8, the spending multiplier would be 5 and the tax multiplier would be –4. So, income would increase by ₹5,000 crore from spending and fall by ₹4,000 crore due to higher taxes. The net effect on GDP = ₹5,000 – ₹4,000 = ₹1,000 crore. This confirms that the Balanced Budget Multiplier = 1.

In short, even with a balanced budget, the government can stimulate the economy, especially during a recession, by shifting resources from the private to the public sector, which spends the entire amount, while private individuals tend to save part of their income. This makes fiscal policy a powerful tool, even without running a fiscal deficit.

4.2.4 The Policy Significance of the Multiplier

The multiplier is a crucial policy tool as it can provide an explanation for the fluctuations in output. The multiplier shows us that output changes when autonomous spending (including investment) changes and that a change in aggregate output can be larger than autonomous spending. If the economy sees a recessionary tendency, for example, during the COVID pandemic, there is a sudden loss of confidence in economic recovery; it will reduce investment spending - this will reduce income, and people will start spending less, thereby driving equilibrium output to a lower level. The multiplier is actually an important concept that can partly explain why output fluctuates, given such an economic condition.

Take, for instance, the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), which provides 100 days of guaranteed wage employment to unskilled rural workers. If the poorer sections of the population receive an additional income equivalent to just 1% of the Gross Domestic Product (GDP), the multiplier effect on aggregate demand can be significantly high—leading to overall economic growth. Studies suggest that the impact multiplier of MGNREGA for lower-income groups is more than 1.4, indicating that every rupee spent generates more than ₹1.40 in economic activity. Such programmes not only help in reducing unemployment, poverty, and income inequality but also lead to an expansion of the domestic market. This in turn enhances the aggregate demand for producers, contributing to a rise in national income and output.

Keynes highlights the importance of the multiplier in the analysis of fiscal policy. It shows that when there is an increase in government expenditure with taxes and investment remaining the same, it raises national output just like investment in the economy. A decrease in taxes, on the other hand, with investment and government purchases remaining the same, increases the equilibrium level of output. But as the additional rupees of disposable income go partly into saving, the rupee rise in consumption will not be quite as much as the rise in disposable income. This implies that the tax multiplier is smaller than the government-expenditure multiplier.

Recap

- The simple Keynesian model shows how aggregate demand determines the level of national income in a two-sector economy without government or foreign trade

- In the two-sector model, equilibrium income can be derived either through the income–expenditure (AD = AS) or saving–investment approach
- The investment multiplier shows how an initial rise in investment leads to a greater overall increase in income
- Leakages like savings, taxes, and imports reduce the actual impact of the multiplier
- The tax multiplier measures how changes in taxes affect national income indirectly through changes in disposable income
- The balanced budget multiplier demonstrates that equal increases in government spending and taxes still result in higher national income

Objective Questions

1. Who introduced the concept of the investment multiplier before Keynes?
2. In the simple Keynesian model, what condition signifies equilibrium in the saving–investment approach?
3. What is the value of the balanced budget multiplier in a two-sector Keynesian economy?
4. What happens to national income if the government raises both taxes and spending by ₹1,000 crore under balanced budget conditions?
5. What is the formula for the investment multiplier in terms of MPC?
6. Name one major leakage in the multiplier process that reduces its effectiveness.
7. What does autonomous investment mean in the Keynesian model?

Answers

1. R.F. Kahn
2. S = I
3. 1
4. National income increases by ₹1,000 crore.
5. 1 / (1 – MPC)
6. Saving
7. Investment that is independent of the current level of income

Assignments

1. Explain with an example how the investment multiplier works to raise national income.
2. Discuss the major leakages in the multiplier process.
3. Compare and contrast the tax multiplier and government expenditure multiplier.
4. Suppose the marginal propensity to consume (MPC) is 0.75. The government reduces taxes by ₹200 crore. Find how much national income (ΔY) will increase due to this tax cut.
5. Suppose MPC = 0.75. The government increases both spending and taxes by ₹100 crore each. Find how much national income will change.

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Money

UNIT 1

Nature, Functions and Supply of Money

Learning Outcomes

After completing this unit, the learner will be able to:

- understand the concept of money
- discuss the functions of money and the role of the central bank
- know the determinants of money supply and demand
- understand the concept of demand for money

Prerequisites

Money is the lifeblood of an economy, playing a central role in its functioning. It serves not just as a means of exchange for daily transactions but also as a store of value, a unit of account, and a standard for deferred payments. Understanding these functions is crucial for economic stability and growth. The concept of money has evolved over time, with classical economists laying the groundwork and modern economists like J.M. Keynes contributing significantly to our understanding of money's demand and supply. Central banks, like the Reserve Bank of India, use monetary policy tools to control inflation, highlighting the importance of studying money and inflation together to grasp their interconnectedness and impact on the economy. By understanding money and inflation, we can better appreciate the intricacies of economic systems and the role of policymakers in maintaining economic stability.

Keywords

Velocity, Fiat Money, Commodity Money, Demand for Money, Supply of Money, Credit Creation

Discussion

5.1.1 Money

The word 'money' comes from the Latin word 'moneta', which means 'coin'. This Latin word is linked to a temple of the goddess Juno in Rome, where money was once associated. The word 'money' also passed through the French word 'monnaie'. The first coins were made in ancient Lydia over 2,500 years ago. Gold and silver coins were worth more than others. As time passed, kingdoms made coins official money. Today, we use paper money that doesn't have value on its own, but the government gives it a specific value.

Money is any economic unit or legal tender used as a payment method for goods and services or for repayment of debts. Money is often misunderstood as wealth. But both are different. Money is merely an economic unit of payment, while wealth consists of valuable economic possessions accumulated over a period of time. Money is the most liquid asset available in the economy. Each government has a monetary system, and money functions based on the general acceptance of its value in its own governmental economy and internationally by its foreign exchange value. Monetary currency has provided a centralised medium of exchange in the economy.

Let us see how money is defined by economists:

- "Money is like a road which helps in transporting the goods and services produced in a country to the market, but this road does not itself produce anything." –Adam Smith
- "Money is what money does." -Prof. Walker
- "Classical economists regarded money as a neutral medium, comparable to a catalyst in a chemical reaction—it facilitates economic transactions but does not influence the fundamental real variables such as output, employment, or resource allocation."
- "Money matters very much." – Monetarists
- "Money is not just a summation of medium of exchange and store of value; rather it is a scientific construct which has been invented for so many useful purposes." - Milton Friedman.
- "Money is anything which can be employed to measure the value of goods and services." - Modern Economists.

In these decades, the form of money is also changing. Earlier, as we know, the barter system existed. The modern century has paper money, coins, and plastic money. And now we have electronic currency like cryptocurrencies and bitcoins. The evolution of money continues.

5.1.2 Functions of Money

We know that money is the economic unit used for transactions. We need money for day-to-day purposes. Money should be given to buy any goods or services. In fact, the economy cannot function well without money. Money has different functions in the economy. We can understand the significance of money by analysing various functions of money. These are the four major functions of money. They are as follows.

Medium of Exchange

Money is the intermediary between a buyer and a seller. This medium facilitates the trade of goods and services in the economy. The medium of exchange must have a standard of value to complete the transaction purpose. This medium of exchange should have legal acceptance in the economy. Currency is the usual medium of exchange, but in times of crisis, alternative forms like emergency currencies or company scrip may be used. The government decides what is accepted as a valid medium of exchange.

Store of Value

Money is considered an asset because it can be saved and used later without losing its value. This is known as a 'store of value'. For money to be a reliable store of value, the economy needs to be stable, and inflation should be low. If inflation is high, the value of money decreases, and it cannot serve as a good store of value. Some assets, like gold and other precious metals, have consistently held value over time due to their rarity and demand. These assets are seen as reliable stores of value. In contrast, currencies can lose their value if the economy is unstable or if there is high inflation. Countries with stable economies and low inflation tend to have currencies that retain their value over time. Other assets, like market bonds and interest-bearing investments, can also hold value and provide returns over time. These assets can serve as an alternative store of value, especially in economies with stable financial systems.

Example: Treasury bonds (T Bonds)

Unit of Account or Measure of Value

In a barter system, exchanging goods directly can be inefficient because it requires a 'double coincidence of wants' (both parties must have what the other wants). Using money as a unit of account solves this problem by providing a common measure of value.

With money, goods and services are valued in terms of a standard unit (like dollars or rupees). This makes it easy to compare prices, record debts, and conduct trade. Money acts as a yardstick to measure the value of different things.

Standard of Deferred Payments

Money enables debt settlement by allowing people to buy goods and services now and pay for them later. This function of money is based on its ability to serve as a

standard unit of account and store of value, making it a widely accepted way to value debt. With money, individuals can enter into agreements to repay debts in the future, essentially creating a contract for future payments in exchange for current purchases.

Other functions of money

Money serves as the basis of credit, enabling individuals and business to borrow funds for investments and expenses, with the promise to repay with interest. It also facilitates the transfer of value over time and sapce, allowing for efficient exchange and commerce.

5.1.3 Types of Money

Money does possess distinguished characteristics. Let us go through the different types of money. Generally, money comes in two forms:

- **Fiat Money :** Fiat money is the most common form of currency used in economies today, despite many people being unfamiliar with the term. It is a type of currency that has no inherent value but is instead backed by government decree, making it a legally accepted medium of exchange. The value of fiat money is not tied to any physical commodity like gold or silver; instead, it is determined by supply and demand forces in the market. The stability of the issuing authority, typically the government, plays a crucial role in maintaining the significance and trust in fiat money. Most paper currencies in circulation, such as the Indian Rupee, US Dollar, and Euro, are examples of fiat currencies. One key benefit of fiat money is that it allows central banks to have greater control over the economy by regulating the money supply. However, a major drawback is that excessive money printing can lead to hyperinflation, undermining the currency's value and eroding trust in the economy.

- **Commodity Money :** As the term indicates, this money is related to a specific commodity. Commodity money is money which has intrinsic value that comes from the physical commodity of which it is made. In simple words, it is a physical good universally used by consumers to trade for goods and services. It is a unique type of money because this is the only money that has actual value. Like gold, we use it as a medium of exchange as well as for jewellery making. Hence, it has outside value too. Examples: Gold, silver, copper, silk.

5.1.4 Determination of Money Supply and Demand

Money circulates in every economy, but have you ever wondered who supplies it and how? The money supply is controlled by central banks, which use various mechanisms to regulate it. The supply of money is influenced by factors like savings, investment, and productivity, as well as monetary forces. Economists have long studied the demand for money, trying to understand what drives it and how it relates to the general price

level. Even classical economists attempted to answer these questions, exploring the connection between money and prices. Understanding the supply and demand of money is crucial for determining income and overall economic activity.

5.1.4.1 Money Supply

The money supply refers to the total amount of money available in the economy at a given time. This includes physical currency like banknotes and coins, as well as bank deposits that can be accessed by cheque. In simpler terms, it is the total stock of money that people have, including cash in their hands and money in their bank accounts that they can use on demand. The supply of money function can be written as:

M = C+D

M = Money supply

C = Currency with Public

D = Demand Deposits

This equation clearly shows that the money supply is the sum total of currency with the public and the demand deposits in the banks. The total money supply M does not include time deposits of banks.

Determinants of Money Supply

The money supply of a nation is determined by several factors, which can be broadly categorised into three main sources. These sources are also known as the determinants of non-confidential money.

1. **Cash Reserve Ratio (CRR):** The Cash Reserve Ratio (CRR) is a key tool used by the central bank to control the money supply in an economy. Commercial banks are required to keep a certain percentage of their deposits as reserves with the central bank, rather than lending them out. This percentage is determined by the central bank and can be adjusted to influence the money supply. For example, in India, the Reserve Bank of India (RBI) might set the CRR at 4%. If the CRR is increased, commercial banks have less money to lend, which reduces credit creation and subsequently decreases the money supply in the economy. Conversely, if the CRR is lowered, commercial banks can lend more, increasing the money supply. By adjusting the CRR, the central bank can regulate the amount of money circulating in the economy.

2. **Excess Reserves of Banks:** Excess reserves refer to the amount of reserves held by commercial banks beyond the required reserve ratio set by the central bank. Required reserves are the minimum amount of cash that banks must keep on hand to meet unexpected demands, and this amount is not available for lending. Excess reserves, on the other hand, are the additional reserves that banks choose to hold beyond the required amount. This amount of cash is also kept safe in the vault. It is not used for lending purposes or any other needs.

3. **Currency Deposit Ratio:** The Currency Deposit Ratio (CDR) is the proportion of cash held by people compared to the amount they deposit in banks. It reflects people's preference for liquidity, or their desire to hold cash versus depositing it in banks. In other words, CDR measures how much cash people want to keep with them versus saving or investing it in banks.

CDR = C/DD

Where, C is the currency held by people

DD is the demand deposits

Measures of Money Supply

The Reserve Bank of India bulletin published in 1977 gives a broader measure for money supply. They are: **M_1, M_2, M_3** and **M_4.** Measures of money supply in countries may vary in the components included. Initially, India had a narrow concept of money supply. The renewed version of the measure of money supply is given below;

M_1=C+DD+OD

Where, C= Currency held by the public

DD=Demand Deposits and

OD= other Deposits of RBI similar to Demand Deposits

M_2= M1+ Saving deposits with Post office saving banks

M_3= M1+ Net Time Deposits with banks

M_4= M3+ Deposits of Post offices- National Saving Certificates

Among the four measures, M_1 has the highest liquidity. From M_2 onwards, the liquidity is decreasing. M_4 has the lowest degree of liquidity. However, M_3 is given certain superiority by the RBI. M_3 is the broad measure of money supply, while M_1 is the narrow concept of money supply. When considering a credit budgeting viewpoint, M_3 is more efficient than M_1 because total credits of banks are closer to time deposits than demand deposits.

5.1.4.2 Demand for Money

Demand for money is the willingness to hold money in hand. Demand for money is influenced by several factors apart from buying and selling goods. As we know, money functions as a medium of exchange, store of value, and unit of account. Money is an irreplaceable unit in the economy. As the demand for money is dependent on several factors, we can say this demand is a derived demand. There are several views about the demand for money. They are Classical, Keynesian, Post-Keynesian views, etc.

Keynes built upon the classical view that money is demanded for transactions (medium of exchange) but added other motives, providing a more nuanced understanding of why people hold money.

According to John Maynard Keynes, in his 1936 book "The General Theory of Employment, Interest and Money," there are three main reasons for demanding money, which he referred to as "liquidity preference." The classical economists have the view that the medium of exchange is the only reason why money was demanded. Keynes does agree with them but added some other motives beyond the previous views.

Demand for Money: Keynesian View

According to Keynes, people demand money for three main reasons:

- Transaction motive
- Precautionary motive
- Speculative motive

Transaction Motive: Both classical economists and Keynes agreed that people hold money for daily transactions. The demand for money for transactions depends on income, and as income rises, so does the demand for money. According to W.W. Haines, transaction demand for money is influenced by factors like income level, payment frequency, timing of receipts and expenses, payment speed, and credit availability. In simple terms, people hold cash for everyday expenses, and the amount they hold depends on their income and financial habits. It is now clear that transaction demand for money is a function of income earned. The relationship can be expressed as:

$$MD_T = f(Y)$$

$$MD_T = kY$$

In short run, the transaction motive of income is constant. This relationship is explained by **kY.** k is the constant.

This relationship can be diagrammatically represented as;

Fig. 5.1.1 Transactions Demand for Money

Here exists a linear and proportional relationship between transaction demand and income. We will get a direct and upward sloping demand curve.

Precautionary Demand

Every household holds a certain sum of money in excess of transaction needs. This is a sum of money kept as security for unforeseen needs. This surplus sum is kept to meet

emergency situations, like any disease, accidents, disasters, etc. Precautionary demand for money is dependent on the size of assets, availability of insurance, expectation of future receptor income, and availability of credit.

Keynes believed precautionary demand for money is linear and proportional to the level of income and it is interest inelastic, which means interest rates have no particular role in deciding precautionary demand for money. The relationship can be shown as;

$\mathbf{MD_P = f(Y)}$

If illustrated by a diagram, the precautionary demand for money will be an upward-sloping straight line.

Speculative Demand for Money

This view is entirely different from classical views. Keynes said, *"the desire to hold money as a store of wealth is a barometer of the degree of our own calculations and conventions concerning* the future." Keynes stated that the demand for money is a choice between holding money and buying bonds. He postulates that interest rates have a significant role in determining the demand for money. He also assumes there are two types of assets: money and bonds. Based on expected future returns, people take decisions to hold money or buy bonds.

Keynes explains that if interest rates are very high, people tend to buy more bonds. They expect that the interest rates may fall in the future, which increases the price of bonds, and vice versa. If people assume a loss in the future from buying stocks or bonds, they decide to hold real balances.

The relationship to the rate of interest can be expressed as below;

$\mathbf{MD_S = \mathit{f}(r)}$

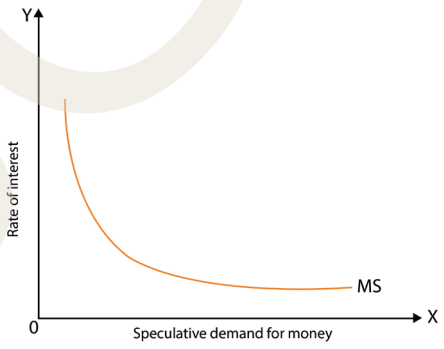

Fig 5.1.2 Speculative demand for money

When interest rates are high, people prefer to invest in bonds rather than holding cash. But when interest rates are low, bond prices are high, making it riskier to invest. In this case, people prefer to hold cash rather than buying bonds. This shows that speculative demand for money and interest rates have an inverse relationship: when interest rates go up, speculative demand for money goes down, and when interest rates go down, speculative demand for money goes up.

Total demand for money is the sum total of transaction demand, precautionary demand, and speculative demand for money, which can be illustrated as;

$MD=MD_T+ MD_P+MD_S$

5.1.5 Credit Creation

Credit creation is the process of bank expansion. The money supply of an economy is highly dependent on this procedure. As we all know, banks provide services like loans, advances, deposits, etc. Banks can make a certain amount of money available to the economy by using their services.

How do banks take part in credit creation?

Banks accept deposits from people. We are familiar with the reserve ratios of banks. Every bank has to keep a certain amount of money as a reserve to meet the needs of depositors. Banks usually work on the credit system. A specific deposited amount can be taken for money creation, meaning the remaining amount can be lent out. Providing loans is a major function of banks. Loans are actually a credit to the bank. Every loan creates an equivalent deposit account in the bank. Here, more than a financial institution, banks work as a business unit. Repayment of loans provides additional earnings for banks. This is how the supply of money is facilitated. Bank expansion is, in fact, the expansion of the money supply too.

Fractional Reserve System: This is the minimum required reserves that must be kept by banks to meet the demands of depositors. Suppose the bank receives a deposit of Rs.10000. This entire amount cannot be taken for lending purposes. A specific share of money has to be kept in the vault, like 10%, which is to be held in liquid cash.

This means a fraction of deposits is kept as bank reserves, and the rest is taken for lending purposes. Any time withdrawal of money is made possible by this reserve. Depositors may meet their needs without delay. The amount that remains of the reserve is used for lending purposes.

In India, **RBI** decides the required reserves of commercial banks. In order to increase the money supply in the economy, the RBI can reduce the reserve ratio. Thus, more lending is possible, and the economy can recover.

High Powered Money (HPM)

High powered money is the currency held by banks and the public, which is given by the Reserve Bank and the government. It is the sum of currency (notes and coins) and commercial bank reserves held by the public. The RBI considers this as the base money (M_0). This money is the foundational sum for bank credit expansion as well as the creation and circulation of money supply.

$$HPM = C + RR + ER$$

C = Currency

RR = Required Reserves

ER = Excess Reserves

A multiplier effect helps in the credit creation in the economy.

Money Multiplier

The money multiplier shows the change in money supply in relation to the total monetary base. The money multiplier is a significant element in the fractional reserve banking system. The money multiplier can otherwise be explained as the ratio of money supply to high powered money. This can be written as,

$$\mathbf{M = C + D}$$

where,

M = Total Money Supply

C = Currency

D = Demand deposits

$$\mathbf{HPM=C+RR+ER}$$

The relationship between money supply and high powered money can be shown as:

$$\frac{M}{H} = \frac{C+D}{C+RR+ER}$$

High powered money is the total money in circulation with public including commercial bank reserves. Let us take the proportion of High powered money as a proportion of bank deposits;

$$H = \frac{C}{D} + \frac{RR}{D} + \frac{ER}{D}$$

The money multiplier is determined by the currency deposit ratio, required reserve ratio of the central bank, and the excess reserves of the commercial banks of a nation. The money multiplier will be high if these three ratios are lower.

How Money Multiplier actually works?

Banks receive demand deposits, hold a fraction as reserves, and lend out the rest.

Every loan creates an equivalent account in the bank, which makes new money.

The monetary base of the economy eventually widens.

Reserve Ratio and Money Multiplier

The money multiplier can be predicted in the economy by closely analysing the

reserve ratio of the central banks. As we know, the reserve ratio is the amount held by commercial banks as liquid money. Example: 10% or 20%.

Money Multiplier= 1/ Reserve Ratio

The money multiplier can be predicted easily. For example, let us assume the nation has a 10% reserve ratio; then the multiplier is 1/10.

Recap

- Money is any economic unit or legal tender used as a payment method for goods and services or repayment of debts
- Medium of Exchange, Store of value, Unit of account are the major functions of money
- Fiat money and Commodity money are the significant types of money
- Money supply is meant by the total amount of money available in the economy
- Money supply which includes currency in hands of public and demand deposits at the banks
- Cash Reserve Ratio, Excess Reserves of Banks and Currency Deposit Ratio are the major determinants of money supply
- CRR is the mandatory percentage of deposits by commercial banks kept as reserves in the central bank
- Excess reserves are the sum of cash or deposits held by central banks more than the required reserves
- CDR is the currency held by the people as a proportion to total deposits in the banks
- CDR is the people preference to liquidity
- M_1, M_2, M_3 and M_4 are the measures of money supply in India
- M_1 has the highest liquidity among other measures
- M_3 is the broad measure of money supply
- Demand for money is the willingness to hold money

- Transaction motive, Precautionary motive and Speculative motive are the three demands for money
- Transaction demand for money and precautionary demand for money are direct function of income
- Speculative demand for money and rate of interest is having an indirect relation
- Credit creation is the process of bank expansion
- Fractional reserve system is the minimum required reserves must be kept by banks to meet the demands of depositors
- High powered money is the currency held by banks and public which is given by Reserve bank and the government
- Money multiplier shows the change in money supply in relation to the total monetary base
- Money Multiplier= 1/ Reserve Ratio

Objective Questions

1. What is the meaning of the Latin term "Moneta"?
2. What is an example of fiat money?
3. Which economic system existed in ancient times for transactions?
4. Commodity money is backed by what?
5. Who said, "Money is what money does"?
6. Is supply of money a stock or flow variable?
7. Who determines the Cash Reserve Ratio (CRR)?
8. What is the maximum limit of CRR in India?
9. What happens to excess reserves during expansionary monetary policy?
10. What is the narrow concept of money supply?
11. What is the broader concept of money supply in India?

12. What are the components of total demand for money?
13. Who introduced the speculative demand for money?
14. Speculative demand for money is a function of what variable?
15. What is the process of bank expansion called?
16. Which reserve system is used in India for credit creation?
17. High Powered Money (HPM) is also known as what?
18. What determines the money multiplier?

Answers

1. Coin
2. Paper currency
3. Barter system
4. Precious metals (like gold, silver)
5. Walker
6. Stock variable
7. Reserve Bank of India (RBI)
8. There is no statutory maximum limit (currently flexible under RBI Act)
9. M_1
10. M_3
11. Transaction, Precautionary, Speculative
12. J.M. Keynes
13. Interest rate
14. Interest rate
15. Credit creation
16. Fractional reserve system
17. Reserve Money
18. Reserve ratios (CRR and SLR)

Assignments

1. Define money and explain its evolution over time.
2. Discuss the four major functions of money and assess their importance in the functioning of a modern economy.
3. Compare and contrast fiat money and commodity money.
4. Explain the Keynesian theory of demand for money.
5. Describe the process of credit creation by commercial banks.

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Monetary Policy and the Role of Central Bank

Learning Outcomes

After completing this unit, the learner will be able to:

- understand the concept of monetary policy
- discuss the role of the central bank
- differentiate between quantitative and qualitative tools of monetary policy
- evaluate the impact of monetary policy measures

Prerequisites

Monetary policy is a crucial tool used by a country's central bank, like the Reserve Bank of India, to control the money supply, credit, and interest rates to achieve economic goals such as controlling inflation, promoting growth, and maintaining financial stability. The central bank regulates credit, issues currency, manages foreign exchange, and ensures financial stability. It uses various tools, including quantitative tools like adjusting interest rates, reserve requirements, and open market operations to control the overall money supply, and qualitative tools like moral suasion and credit rationing to direct credit to specific sectors. By using these tools, monetary policy can help control inflation, stabilise the economy, and encourage growth. However, its effectiveness can be limited by factors like time lags, economic structural issues, and global influences. Understanding monetary policy is essential to appreciate how central banks manage economic challenges and promote balanced development, making it a vital aspect of economic management.

Keywords

Monetary Policy, Contractionary Monetary Policy, Expansionary Monetary Policy, CRR, SLR, Repo Rate, Reverse Repo Rate

Discussion

5.2.1 Monetary Policy

Monetary policy is the process by which the central bank of a country controls the supply of money, availability of credit, and interest rates to achieve specific economic objectives such as price stability, economic growth, and full employment. Monetary policy is used by the monetary authority based on the economic situation of the nation. On this basis, it can be divided into two types:

1. Expansionary Monetary Policy
2. Contractionary Monetary Policy

5.2.1.1 Types of Monetary Policy

Monetary policy is broadly classified into two types:

1. **Expansionary Monetary Policy :** Expansionary monetary policy refers to the central bank implementing measures during periods of economic slowdown or recession. It involves increasing the money supply and lowering interest rates, which results in cheaper and more available credit. This encourages investment, consumption, and employment, thereby boosting aggregate demand and overall economic activity.
2. **Contractionary Monetary Policy :** Contractionary monetary policy is used by the central bank when a nation faces inflation. It involves decreasing the money supply and increasing interest rates to make borrowing more expensive and reduce spending. This helps to control inflation by lowering aggregate demand and preventing the economy from experiencing higher prices.

5.2.1.2 Objectives of Monetary Policy

Monetary policy is designed by the monetary authority to achieve certain important goals that help maintain a healthy and stable economy. The main objectives of monetary policy are discussed below:

1. **Price Stability :** The primary objective of monetary policy is to control inflation. Inflation refers to the rate of increase in prices over a given period. High inflation disrupts the economy and affects the poor by increasing their cost of living. It also makes exports more expensive, reduces the savings rate, and encourages unproductive investments such as in jewellery and

real estate. However, a healthy rate of inflation is necessary; inflation never falls to zero. Zero inflation is not desirable because a moderate level of inflation is needed to encourage production and economic growth. The ideal inflation rate varies across countries and over time. For example, the United States targets an inflation rate of around 2%, while India aims for 4%, with a tolerance band of 2% to 6%. In periods of high inflation, the central bank adopts a contractionary monetary policy to reduce inflationary pressures. Similarly, during periods of low inflation, the central bank uses an expansionary monetary policy to stimulate demand and economic activity. Thus, monetary policy plays a crucial role in maintaining price stability alongside promoting economic growth and employment generation.

2. **Economic Growth :** Promoting economic growth is a key objective of monetary policy in both developed and developing economies. Economic growth refers to an increase in the productive capacity of the economy, which leads to a rise in real national income. To achieve this, it is important to boost both savings and investments. This can be achieved through monetary policy by influencing interest rates and guiding the banking sector to provide loans to priority sectors such as agriculture, industry, and small businesses. Lower interest rates encourage borrowing and investment, while higher interest rates promote savings. Thus, monetary policy plays a vital role in supporting and sustaining economic growth.

3. **Exchange Rate Stability** : Exchange rate stability refers to the goal of maintaining a stable value of the domestic currency in terms of foreign currencies. The exchange rate system can be divided into two types viz fixed and floating (flexible) exchange rate systems. In most countries today, the exchange rate is determined by market forces—that is, the demand for and supply of foreign exchange—under a flexible exchange rate system. In contrast, under a fixed exchange rate system, the rate is set and maintained by the monetary authority.

   In a flexible exchange rate system, when there is an imbalance between the demand and supply of foreign currency, the value of the domestic currency may fluctuate. For example, if more people want to invest abroad, the demand for foreign currency increases, which can lead to the depreciation (fall in value) of the domestic currency. On the other hand, if investment opportunities are more attractive within the country, the demand for the domestic currency increases, helping it appreciate. To avoid sharp or sudden fluctuations in exchange rates, the central bank may intervene. It can sell foreign currency from its reserves to support the value of the domestic currency or raise interest rates to reduce the demand for foreign currency. By doing this, the central bank aims to maintain confidence in the currency, support international trade, and ensure overall economic stability.

4. **Full Employment :** Full employment refers to a situation where all individuals who are willing and able to work at the prevailing wage rate can find employment. It is an important goal of monetary policy because when more people are employed, overall production and income in the economy increase, leading to higher social welfare and prosperity. However, achieving full employment can sometimes conflict with other goals like controlling

inflation. For example, when the central bank adopts a tight (contractionary) monetary policy to control inflation, it may reduce the money supply and raise interest rates. This can lower investment and spending in the economy, which may lead to job losses and lower employment. Therefore, when unemployment is high, the central bank may adopt an expansionary monetary policy. This involves reducing interest rates and increasing the money supply to make borrowing cheaper and encourage businesses to invest more. As a result, more jobs are created, helping the economy move toward full employment.

5.2.1.3 Instruments of Monetary Policy

The central bank uses various tools to regulate the flow of credit and maintain economic stability. These tools, known as the instruments of monetary policy, are broadly classified into two categories:

- Quantitative Credit Control Measures
- Qualitative or Selective Credit Control Measures

Quantitative Credit Control Measures

Quantitative Credit Control Measures aim to control the overall volume of credit in the economy without focusing on any specific sector. For this purpose, the central bank sets certain interest rates that apply to the entire banking system. These are also known as general credit control measures. The key instruments under this category include:

1. **Bank Rate** : The bank rate is the rate at which the central bank lends money to commercial banks and other financial institutions. When the central bank raises the bank rate, borrowing becomes more expensive for commercial banks. As a result, they increase their own lending rates, which reduces the amount of credit available in the economy. This helps to control inflation by reducing borrowing, spending, and aggregate demand. On the other hand, when the bank rate is decreased, borrowing becomes cheaper for commercial banks. This encourages them to lend more, increasing the flow of credit in the economy. As a result, investment and consumption rise, helping to boost economic activity, especially during periods of recession.

2. **Open Market Operations (OMO) :** Open Market Operations (OMO) refer to the buying and selling of government securities in the open market by the central bank. It is one of the key tools used to control the money supply in the economy. When the economy faces inflation, the central bank sells securities to withdraw money from the banking system. This reduces the money supply, lowers aggregate demand, and helps control inflation. Conversely, when economic activity slows down, the central bank buys securities, injecting money into the banking system. This increases the money supply, boosts aggregate demand, and encourages higher production and investment. Thus, Open Market Operations plays an important role in stabilising the economy by adjusting liquidity according to the prevailing economic conditions.

3. **Cash Reserve Ratio (CRR) :** Cash Reserve Ratio (CRR) is the percentage of a commercial bank's total deposits that must be maintained as cash with the central bank. It is a tool used by the central bank to regulate liquidity and credit availability in the economy. During an inflationary period, the central bank raises the CRR, requiring commercial banks to hold a larger portion of their deposits as reserves. This reduces the funds available for lending, thereby lowering the money supply in the economy. This measure is often used to control inflation. On the other hand, when the CRR is lowered, banks can retain more funds for lending and investment. This leads to an increase in credit creation, which helps stimulate economic activity, especially during a slowdown.

4. **Statutory Liquidity Ratio (SLR)** : SLR refers to the percentage of a bank's total deposits that it must keep in the form of liquid assets such as cash, gold, or approved government securities. To control inflation or reduce excess money in the economy, the central bank increases the SLR, which reduces the amount of money banks can lend. On the other hand, when the central bank wants to increase lending (to boost economic activity), it decreases the SLR. In short, SLR is a tool used by the central bank to control the money supply and credit in the economy.

Qualitative or Selective Credit Control Measures

Monetary authorities like the central bank often control how credit is supplied in the economy. Sometimes, even if someone wants a loan, financial institutions may refuse to give credit. These controls are called qualitative or selective credit control measures because:

- They target specific sectors of the economy or certain groups of people.
- They treat different groups differently (discriminatory).
- They do not always consider the overall supply and demand for credit.

The major qualitative credit control measures are:

1. **Changes in Margin Requirement** : Margin requirement is the difference between the value of goods that a borrower offers as security and the amount of loan they get from the bank. For example, suppose a trader wants to get a loan by pledging goods worth ₹1,00,000. If the margin requirement is 20%, the bank will give a loan of ₹80,000 (₹1,00,000 minus 20% margin). The trader must provide the remaining ₹20,000 as their contribution. Now, imagine the central bank finds that some traders are hoarding rice, which causes rice prices to rise sharply. To stop this, the central bank increases the margin requirement for loans against rice stock from 20% to 40%. This means traders must now provide more of their own money to get a loan. So if trader pledges rice worth ₹1,00,000, the bank will only lend ₹60,000 instead of ₹80,000. Because traders get less loan money, they will stockpile less rice, helping to control rice prices.

2. **Credit Rationing :** Sometimes, the central bank controls the amount of credit in the economy by using credit rationing. This means the central bank can refuse to give loans to certain commercial banks or reduce the total loans

that all banks can provide. It can also set fixed loan limits, called quotas, for different banks. By doing this, the central bank controls how much money banks can lend to businesses and individuals, helping to manage the overall credit supply and keep the economy stable.

3. **Direct Action** : If commercial banks do not follow the rules set by the central bank, the central bank can take direct and strict action against them. For example, if a bank ignores instructions to limit risky loans, the central bank may impose harsh restrictions on that bank's lending activities. This could include reducing the amount of credit the bank can provide or even temporarily stopping certain types of loans. Such direct actions help ensure that banks follow regulations and maintain financial stability in the economy.

5.2.2 Role of Central Bank in Monetary Policy

A central bank is the top financial authority in a country or a group of countries. Its main role is to manage the money supply, issue currency, and regulate interest rates to meet certain economic and financial objectives. The central bank usually works independently or with minimal political influence to ensure financial stability and support the country's overall economic health.

Some of the most prominent central banks in the world include the Federal Reserve System (the Fed) in the United States, which plays a major role in global monetary policy. The Bank of England is the central bank of the United Kingdom, while the European Central Bank (ECB) manages monetary policy for the European Union countries that use the euro. Canada has the Bank of Canada, and Japan has the Bank of Japan. In India, the central bank is the Reserve Bank of India (RBI), which is responsible for issuing currency, controlling inflation, managing interest rates, and ensuring the stability of the financial system. These central banks play a crucial role in maintaining economic stability in their respective countries.

5.2.2.1 Functions of a Central Bank

A central bank carries out several essential functions to ensure stability in the financial system and promote sound economic management. While the specific responsibilities may differ across countries, the following are the core functions commonly performed by central banks:

1. **Formulation and Implementation of Monetary Policy**: One of the key responsibilities of a central bank is to design and implement the country's monetary policy. This includes managing the supply of money, controlling interest rates, and regulating credit conditions to achieve macroeconomic objectives such as price stability, sustainable economic growth, and full employment. To achieve these goals, the central bank employs various policy instruments such as open market operations, changes in reserve requirements, and adjustments to the policy interest rate.

2. **Issuance and Regulation of Currency** : The central bank has the exclusive authority to issue the national currency. It ensures an adequate and timely

supply of currency notes and coins and maintains their quality and security. Through this function, the central bank works to uphold public confidence in the national currency and support overall monetary stability.

3. **Banker to the Government and Commercial Banks** : The central bank functions as the banker to the government and to commercial banks. It maintains the government's accounts, facilitates its transactions, and manages the issuance of public debt. For commercial banks, it offers clearing and settlement services, holds their reserves, and acts as the lender of last resort during times of financial distress.

4. **Maintaining Financial Stability**: Ensuring the stability of the financial system is another critical function. Central banks supervise and regulate banks and other financial institutions to ensure their soundness and compliance with regulatory norms. They also monitor systemic risks, address emerging vulnerabilities, and provide liquidity support when necessary to prevent financial crises.

5. **Management of Foreign Exchange**: Central banks manage the country's foreign exchange reserves and intervene in currency markets when required to stabilise the exchange rate. This is essential for promoting orderly foreign trade and maintaining external sector stability.

6. **Economic Research and Data Analysis**: To support effective policymaking, central banks conduct extensive economic research and analysis. They monitor key economic indicators, study macroeconomic trends, and publish reports and forecasts. This research helps in informed decision-making and also provides valuable insights to the government, financial markets, and the general public.

7. **Oversight of the Payment System** : Central banks oversee and regulate the national payment systems to ensure their safety, efficiency, and reliability. They set standards, promote secure technologies, and ensure that payment and settlement mechanisms operate smoothly across the financial system.

5.2.2.2 Reserve Bank of India (RBI) and Monetary Policy

The Reserve Bank of India (RBI) is the central bank of India, established on April 1, 1935, under the Reserve Bank of India Act, 1934. It functions under the supervision of the Central Board of Directors, appointed by the Government of India. The Governor, also appointed by the central government, is the chief executive and oversees the day-to-day operations of the RBI. Its main objectives are to ensure price stability, control inflation, and promote economic growth. Over the years, the RBI's policy approach and tools have evolved in response to India's changing economic needs and global developments.

In the early years after independence, India's economy required infrastructure development and capacity building. Hence, fiscal policy (government spending and taxation) played a more important role than monetary policy. The government incurred large fiscal deficits, often financed by borrowing from public sector banks or issuing

ad hoc treasury bills, which eventually led to inflation, especially during the 1980s. To control inflation, the RBI shifted its focus in 1986 towards monetary targeting, particularly controlling the money supply (M3). The aim was to ensure macroeconomic stability and reduce the inflationary impact of fiscal deficits. This marked the beginning of a more disciplined and targeted approach to monetary management.

After the 1991 economic reforms, the RBI's role became more significant. Steps were taken to reduce the RBI's automatic financing of fiscal deficits. By 1997, ad hoc treasury bills were completely phased out. This move aimed at strengthening the independence of the RBI and improving inflation control mechanisms. Despite earlier efforts, deficits were still monetised through primary issuances of public debt. To put an end to this practice, in 2006, the RBI was prohibited from subscribing to the primary issuance of government securities. This allowed the central bank to focus more on price stability and control over liquidity.

On the recommendation of the Second Narasimhan Committee, the Interim Liquidity Adjustment Facility (ILAF) was introduced in April 1999. This introduced repo and reverse repo rates as key tools of liquidity management, reducing reliance on instruments like the Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR). However, ILAF lacked a ceiling rate and a single benchmark policy rate. To improve transparency and efficiency, in May 2011, the RBI adopted the Revised Liquidity Adjustment Framework (RLAF). The repo rate was made the sole independently changing policy rate. This helped simplify the RBI's policy stance and made its monetary actions more predictable and understandable to the market.

A major shift came in 2016 when the RBI officially adopted inflation targeting as its core objective. A Monetary Policy Framework Agreement (MPFA) was signed between the RBI and the Government of India. The inflation target was set at 4% with a tolerance band of ±2%. If the RBI fails to meet this target, it must explain the reasons, suggest corrective actions, and commit to a timeframe for achieving the target.

Recap

- Monetary policy refers to the process by which a central bank controls money supply, interest rates, and credit availability
- CB's objective is to achieve price stability, economic growth, and full employment
- Monetary policy includes two types – Expansionary and Contractionary
- Objectives of monetary policy – stability, economic growth, exchange rate stability, and full employment
- The RBI was established in 1935 under the RBI Act, 1934, and functions

under the Government of India's supervision

- The main objectives of the RBI are to maintain price stability, control inflation, and support economic growth
- Repo rate is the rate at which the RBI lends money to commercial banks, used to control inflation and liquidity
- Reverse repo rate is the rate at which the RBI borrows money from banks; it helps absorb excess liquidity from the banking system
- Cash Reserve Ratio (CRR) is the percentage of total deposits that banks must keep with the RBI in cash; a higher CRR reduces the money supply
- Statutory Liquidity Ratio (SLR) is the percentage of deposits banks must keep in the form of liquid assets like gold or government securities
- The bank rate is the long-term rate at which the RBI lends to banks without any repurchase agreement; it is less used nowadays
- Open Market Operations (OMO) involve the buying or selling of government securities by the RBI in the open market to control liquidity
- Moral suasion is when the RBI advises or requests banks to follow certain policies without any legal force
- Selective Credit Controls (SCC) are the RBI controls on loans to specific sectors to maintain stability

Objective Questions

1. What type of monetary policy is used during a recession to boost economic activity?
2. Which monetary policy tool involves buying and selling government securities in the open market?
3. What is the main objective of contractionary monetary policy?
4. Which interest rate is charged by the central bank on loans to commercial banks?

5. What is the ideal inflation target set by the RBI under the Monetary Policy Framework Agreement?

6. Under which instrument does the central bank change the percentage of deposits that banks must hold in cash with it?

7. Which qualitative measure of credit control involves setting the difference between the value of security and the loan granted?

8. Which institution is responsible for formulating and implementing monetary policy in India?

9. In which year did the RBI adopt inflation targeting as its formal policy framework?

10. Which RBI liquidity tool introduced in 1999 used repo and reverse repo rates as key instruments?

11. What is meant by full employment in the context of monetary policy?

12. What do we call the percentage of a bank's deposits that must be held in liquid assets like cash, gold, or government securities?

13. Which function of the central bank ensures smooth functioning of clearing, settlement, and payment systems?

14. What is the main objective of monetary policy in controlling inflation?

15. Which act established the Reserve Bank of India?

Answers

1. Expansionary Monetary Policy
2. Open Market Operations (OMO)
3. To control inflation
4. Bank Rate
5. 4% (with a tolerance band of ±2%)
6. Cash Reserve Ratio (CRR)
7. Change in Margin Requirement

8. Reserve Bank of India (RBI)
9. 2016
10. Interim Liquidity Adjustment Facility (ILAF)
11. A situation where all individuals willing and able to work can find employment at the prevailing wage rate
12. Statutory Liquidity Ratio (SLR)
13. Oversight of the Payment System
14. Price Stability
15. Reserve Bank of India Act, 1934

Assignments

1. Explain the types of monetary policy and their impact on the economy.
2. Discuss the major objectives of monetary policy.
3. Describe the quantitative and qualitative instruments of monetary policy.
4. Examine the role and functions of the central bank in monetary policy.
5. Explain the evolution of the Reserve Bank of India's monetary policy framework.
6. How does the RBI use monetary policy to control inflation and promote growth?

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BLOCK

Monetary Theory

UNIT 1

Quantity Theory of Money

Learning Outcomes

After completing this unit, the learner will be able to:

- understand the ideas of Fisher's Quantity Theory of Money
- identify the classical dichotomy
- know the concept of neutrality of money

Prerequisites

In the early 20th century, the role of money in the economy sparked deep curiosity among economists. At that time, currencies were made of metal, central banks had limited influence, and inflation was rare but dangerous. The public had a simple understanding, when money was abundant, things became costlier; when scarce, the economy stalled. But how exactly did this play out across a nation's entire economic system?

Irving Fisher, a trained mathematician turned economist, stepped in to provide clarity. Observing how money changed hands, from buyers to sellers and then back again, he believed that this flow, repeated thousands of times a day, determined not just individual transactions but the price level of an entire economy. It was not just the amount of money people had, but how fast they spent it that mattered. His equation, MV = PT, became a foundational expression of this logic, connecting money, velocity, prices, and output in a neat algebraic balance.

Meanwhile, classical economists like Ricardo and Mill were less interested in money as a force for change and more as a passive tool. They insisted that real economic decisions; what we produce, consume, and invest, are driven by actual goods and resources, not by pieces of paper or coin. For them, money merely reflected value; it did not create it. Whether prices doubled or halved, if the number of goods remained the same, the real economy was untouched. This

belief in separating “real” from “nominal” gave rise to the Classical Dichotomy. This view carried into the idea of neutrality of money. If more money enters the system, prices might rise, but real output and employment remain unaffected. Money was a facilitator, not a driver. But the Great Depression challenged these beliefs. As factories shut and people remained unemployed, classical logic seemed too tidy, too abstract for a messy reality. Keynes, observing these cracks, argued that money and demand could not be ignored, especially in the short run.

Keywords

Quantity Theory of Money, Equation of Exchange, Velocity of Money, Money Supply, Price Level, Classical Dichotomy, Real Variables, Nominal Variables, Monetary Neutrality, Aggregate Demand, Aggregate Supply

Discussion

6.1.1 Fisher's Quantity Theory of Money

Irving Fisher, a prominent American economist, introduced the Quantity Theory of Money in the early 20th century. His primary concern was to understand how the money supply in an economy relates to the overall level of prices. Fisher believed that changes in the money supply were the main drivers of inflation or deflation in the long run.

Assumptions

1. Velocity of Money (V) is Constant: He believed that people spend money at a stable and predictable rate over time.
2. The theory asumes that the volume of transaction or output remains constant, meaning the economy is operating at full employment.
3. Money is Neutral: Changes in the money supply only affect nominal variables (like the price level), not real variables (like output or employment).
4. Direct and Proportional Relationship between money and price level: If M increases, P must also increase in the same proportion, assuming V and T are fixed.

On the basis of these assumptions, Fisher developed Quantity Theory of money. He explained it with a mathematical formula, called equation of exchange, showing how money supply affects price. The equation of exchangeis MV=PT, where,

- M: Quantity of money in circulation
- V: Velocity of money. It refers to the number of times a unit of money is used

to purchase goods and services in a given period

- P: Average price level of goods and services
- T: Total number of transactions or total output in the economy

In Fisher's Quantity Theory of Money, the equation of exchange (MV = PT) represents a fundamental relationship between money and economic activity. The left-hand side (MV) stands for the total spending in the economy, where M is the money supply and V is the velocity of money, indicating how frequently each unit of currency circulates in purchasing goods and services. The right-hand side (PT) captures the total value of goods and services sold, where P is the average price level and T is the volume of transactions or output. Fisher argued that these two sides are always equal, meaning the total money spent in the economy must match the total sales revenue generated. This equation is crucial for understanding how changes in the money supply (M), holding other factors constant, directly impact the price level (P), making it a powerful tool for analysing inflation or deflation in a simplified economic model.

The implications of Fisher's Quantity Theory of Money are significant for understanding inflation and guiding monetary policy. According to the theory, inflation arises when there is an excessive supply of money in the economy compared to the availability of goods and services; essentially, too much money chasing too few goods. This means that for price stability to be maintained, the money supply must be carefully regulated. If the supply of money increases without a corresponding rise in output, prices will inevitably rise, leading to inflation. Therefore, governments and central banks need to exercise caution when expanding the money supply. Fisher's theory strongly influenced the development of monetarism, a school of thought that argues that controlling the money supply is key to managing the economy. This approach became central to many countries' monetary policies during the 20th century, particularly in efforts to control inflation and ensure long-term economic stability.

Fisher's theory faced several criticisms:

1. **Velocity (V) is not Constant:** During recessions or financial uncertainty, people may choose to hold onto money rather than spend it, causing V to drop.

2. **Output (T) can Change:** Economies often operate below full employment, especially during downturns. Therefore, increasing the money supply may increase output first before affecting prices.

3. **No Role for Interest Rates or Expectations:** Fisher's model does not consider how interest rates, business confidence, or speculative motives affect the demand for money and prices.

4. **No Time Lag Considered:** In reality, the effects of changing the money supply are not immediate; they happen with a lag.

Fisher's Quantity Theory of Money is a cornerstone of classical monetary thought. It presents a simple but powerful idea, the price level in the economy is directly influenced

by the money supply, assuming stable velocity and output. While modern economists have pointed out its limitations, especially in the short run, Fisher's theory remains foundational in understanding the long-run relationship between money and prices.

6.1.2 Classical Dichotomy

The Classical Dichotomy is a central concept in classical economics that argues for a fundamental separation between the real economy and the monetary economy. It was introduced by classical economists like David Ricardo and John Stuart Mill, and it has shaped the way economists think about the role of money in influencing economic activities. At its core, the classical dichotomy asserts that economic variables can be separated into two broad categories:

1. Real variables
2. Nominal variables

Real variables refer to those that capture the physical aspects of the economy, such as real GDP or output (which represents the total quantity of goods and services produced), employment and labour, capital and investment in physical terms, real wages (adjusted for inflation), real interest rates, and actual levels of consumption and production. These variables reflect the economy's true productive performance and resource utilisation, focusing on "what" and "how much" is produced, irrespective of monetary values.

Nominal variables are expressed in monetary terms and include money supply (M), the general price level (P), nominal wages (which do not account for inflation), nominal interest rates, and the value of output in currencies like rupees or dollars. While nominal variables indicate the market value of goods and services, they do not convey information about the real quantities involved in economic activity.

The principle of separation in classical economics holds that changes in nominal variables, such as the money supply, do not influence real variables like employment or output in the long run. This implies that the real economy operates independently of the monetary sector. This idea rests on key assumptions:

1. Perfect competition
2. Flexibility of prices and wages
3. Full information, and the existence of a long-run equilibrium.

Under these conditions, money is viewed merely as a "veil", a medium that facilitates exchange but does not interfere with decisions related to production or employment. The Quantity Theory of Money, particularly Fisher's Equation (MV = PT), reinforces this concept by suggesting that if the velocity of money (V) and the volume of transactions or output (T) remain constant, then any increase in the money supply (M) leads only to a proportional increase in the price level (P), without affecting real economic variables.

Let us consider an example to understand the classical view of money neutrality.

Suppose an economy produces 100 units of goods, each priced at ₹10, resulting in a total nominal output value of ₹1,000. If the central bank decides to double the money supply, classical economists argue that prices would also double, from ₹10 to ₹20 per unit, while the quantity of goods produced would remain unchanged at 100 units. Consequently, real variables such as employment, output, and real wages would not be affected by the increase in the money supply. This implies that although the economy appears to have more money in circulation, nothing substantial has changed in real terms. Thus, money is considered neutral in its effect on real economic activity.

The implications of the Classical Dichotomy are:

1. **Monetary Neutrality**: Money has no real effects on the economy in the long run. Increasing the money supply only affects prices, not output or employment.

2. **Focus on Real Analysis**: Classical economics focuses on real variables to understand growth, production, and employment. Monetary factors are considered secondary.

3. **Ineffectiveness of Monetary Policy**: Since money is neutral, monetary policy (e.g., changing interest rates or printing money) cannot influence real economic outcomes like reducing unemployment or increasing output in the long run.

4. **Supports Laissez-Faire**: The belief in the automatic adjustment of markets supports the idea of non-intervention by government, assuming the economy can stabilise on its own.

Keynes strongly rejected the classical dichotomy, arguing that money does, in fact, influence real variables, particularly in the short run. Unlike classical economists who assumed perfect price and wage flexibility, Keynes believed that in reality, prices and wages are often sticky and do not adjust quickly to economic changes. He pointed out that fluctuations in the money supply can affect interest rates, which in turn influence investment decisions by firms. This chain reaction impacts overall output and employment levels in the economy. During periods of recession or depression, Keynes asserted that active monetary and fiscal policy interventions are essential to stimulate aggregate demand and reduce unemployment. By highlighting these interconnections, Keynes effectively blurred the classical separation between real and nominal variables, demonstrating that money is not always neutral, especially in times of economic downturns.

During the 1930s, massive unemployment and falling output contradicted the classical prediction of full employment. Despite falling wages and prices, the economy did not recover automatically. This failure of the self-correcting mechanism challenged the classical dichotomy. Keynes's General Theory emerged as a response, showing that monetary and fiscal tools were necessary to restore full employment.

The Classical Dichotomy simplifies economic theory by dividing real and nominal aspects of the economy. While it offers a clean framework for long-run analysis, it

ignores the short-run frictions that dominate real-world economics. Modern economists recognise that while money may be neutral in the long run, it can have significant short-run effects. As such, the classical dichotomy is viewed as a useful but limited concept, particularly in the context of modern macroeconomic policy.

6.1.3 Neutrality of Money

In classical economics, the concept of neutrality of money refers to the idea that changes in the money supply only affect nominal variables (like prices, wages, and exchange rates) but have no impact on real variables (like output, employment, or real wages) in the long run. According to this view, money acts simply as a medium of exchange and does not influence the real workings of the economy. Let us break this down. Suppose the government or central bank increases the amount of money in circulation. According to classical economists, this increase will lead to higher prices (inflation), but it will not change the total goods and services produced in the economy. Output, employment, and productivity remain the same because they are determined by real factors like technology, capital stock, labour availability, and consumer preferences, not by the amount of money in the system. This belief arises from the assumption that prices and wages are fully flexible. So, if there's more money in the system, people might have more cash in their hands, but the prices of goods and services and wages will also rise proportionately. This means their real purchasing power remains unchanged. For instance, if everyone receives double the money, but all prices also double, no one is actually better off. Therefore, in the classical framework, money is neutral; it does not stimulate economic growth or reduce unemployment.

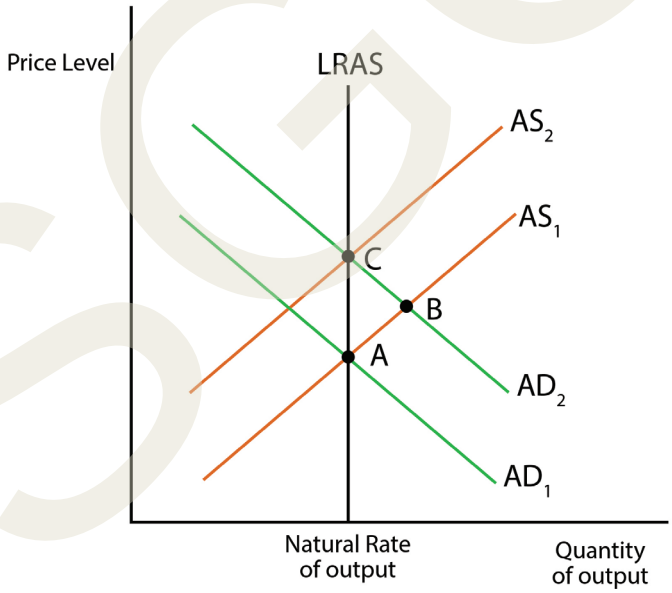

Fig 6.1.1 Neutrality of Money

The figure above demonstrates the classical view of long-run monetary neutrality using the Aggregate Demand–Aggregate Supply (AD–AS) framework. Initially, the economy is in equilibrium at point A, where the initial Aggregate Demand curve (AD_1) intersects the short-run Aggregate Supply curve (AS_1) and the Long-Run Aggregate

Supply (LRAS) curve. This point represents full employment and the economy's natural level of output.

Now, imagine the money supply increases. This causes a rightward shift in the AD curve, from AD_1 to AD_2, pushing the economy to a new short-run equilibrium at point B, where both output and prices rise. However, under classical assumptions, prices and wages are flexible. Over time, AS_1 shifts leftward to AS_2 as input costs and wages rise, ultimately bringing the economy back to point C, where it again intersects with the LRAS.

The crucial takeaway is that while the price level increases (from A to C), the real output remains constant. This shift illustrates that monetary expansion only affects nominal variables (like prices) in the long run, not real variables (like output or employment), thus proving the classical claim that money is neutral in the long run.

The neutrality of money supports the classical preference for laissez-faire policies, where the government does not interfere in the economy. Since monetary interventions (like printing more money) do not improve real outcomes, classical economists argue that such policies are ineffective in solving economic problems like unemployment or stagnant output.

However, this concept has faced strong criticism, especially from Keynesian economists, who argue that in the short run, monetary changes do affect real economic activity. During economic downturns, an increase in the money supply can lower interest rates, boost investment, raise output, and reduce unemployment. Therefore, while money may be neutral in the long run, it can be non-neutral in the short run, and thus monetary policy has a significant role in stabilising the economy.

Recap

- Fisher's Quantity Theory of Money explains the relationship between money supply, velocity, price level, and transactions using MV = PT
- It assumes that velocity and output remain constant in the short run, making changes in the money supply directly proportional to the price level
- Fisher argued that money is neutral in the long run; it only affects nominal variables, not real variables like output or employment
- Inflation refers to as a result of too much money chasing too few goods
- Classical Dichotomy separates real variables (like output and employment) from nominal variables (like money and prices)
- Nominal variables do not affect real variables in the long run,

- Classical economists believe in monetary neutrality and full employment, even with changes in the money supply
- Keynes criticised the classical view, arguing that money does influence output and employment, especially during recessions
- According to Keynes, in the short run, monetary policy can reduce unemployment and stimulate demand

Objective Questions

1. Who introduced the Quantity Theory of Money?
2. What does V stand for in MV = PT?
3. What is assumed to be constant in Fisher's theory?
4. In the classical view, what does money affect in the long run?
5. What school of thought did Fisher belong to?
6. Which concept separates real and nominal variables?
7. What are real wages adjusted for?
8. What kind of economy does Classical Dichotomy describe?
9. What happens to prices when the money supply doubles?
10. What is money assumed to be in classical economics?
11. Who criticised the Classical Dichotomy during the Great Depression?
12. What does Keynes say about wages during recessions?
13. What framework illustrates the neutrality of money?
14. What shifts when the money supply increases in the AD–AS model?
15. What happens to output in the long run under the neutrality of money?

Answers

1. Fisher
2. Velocity
3. Output and velocity
4. Prices
5. Classical
6. Classical Dichotomy
7. Inflation
8. Real–monetary separation
9. They double
10. Neutral
11. Keynes
12. Sticky
13. AD–AS
14. AD curve
15. Remains the same

Assignments

1. Explain Fisher's Quantity Theory of Money and its core assumptions.
2. Describe the Classical Dichotomy and its theoretical foundations.
3. Distinguish between real and nominal variables with examples.
4. What does the neutrality of money mean in classical economics?

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UNIT 2

Cambridge Theory of Money and Keynesian Liquidity Preference

Learning Outcomes

After completing this unit, the learner will be able to:

- understand theory of money
- know about liquidity preference theory

Prerequisites

The theory of money explores the role of money in the economy, including its functions, demand, and supply. The Cambridge version of the quantity theory of money emphasizes the demand for money and its relationship to income and prices, highlighting the importance of cash balances and the velocity of money. Liquidity preference, introduced by Keynes, refers to the demand for money as a store of value and a medium of exchange, driven by speculative, precautionary, and transactional motives. A liquidity trap occurs when interest rates are extremely low, and people prefer to hold cash rather than invest, rendering monetary policy ineffective. Understanding these concepts provides insights into monetary economics, the role of central banks, and the complexities of monetary policy, including its limitations and potential impact on economic outcomes. By studying these topics, one would gain a deeper understanding of how money and monetary policy shape the economy.

Keywords

Cambridge Version, Liquidity Preference Theory, Liquidity Trap

Discussion

6.2.1 Theory of Money-Cambridge Version

A.C. Pigou and Alfred Marshall postulated a new version of the quantity theory of money. The value of money is determined from the demand for money. They argued that the demand for money is backed by the transaction function and the store of value function. In the cash balance approach, money has alternate purposes other than a medium of exchange.

"In every state of society there is some fraction of their income which people find it worthwhile to keep in the form of currency; it may be a fifth, a tenth, or a twentieth"

– Alfred Marshall

The theory is explained by following equation;

$M_D = KPY$

{**M_D** = demand for money, **K** = money income that held as cash balances**, P** = general price level, **Y** = real income}.

When compared to Cash transaction approach of Irving Fisher, **MV = PT**, K in cash balance approach is the reciprocal of **V**. It is assumed that **K** is stable and constant. Because velocity of circulation is stable in short run. Cambridge theory considers demand for money is depended on money income alone.

Example: Lets take V = 5. That means, on an average a unit of money used is 5 times at a period. When velocity is 5, the new formula states, K = 1/V. that is K = 1/5 = *n*. this suggests nth part of real output of income in hands as cash balance for further needs.

Let s illustrate the theory using a diagram. Demand for money is given as the straight line M_D= KPY curve. The straight line shows direct and proportional relationship between demand for holding money as cash balance and money income. As the money income increases, demand for holding money also increases.

As the price level increases from P_1 to P_2, the demand for holding money increases from M_1 to M_2. A general rise in the price level demands more money in hand to meet daily transactions. Thus, the demand for holding money moves in a proportional relationship with the price level.

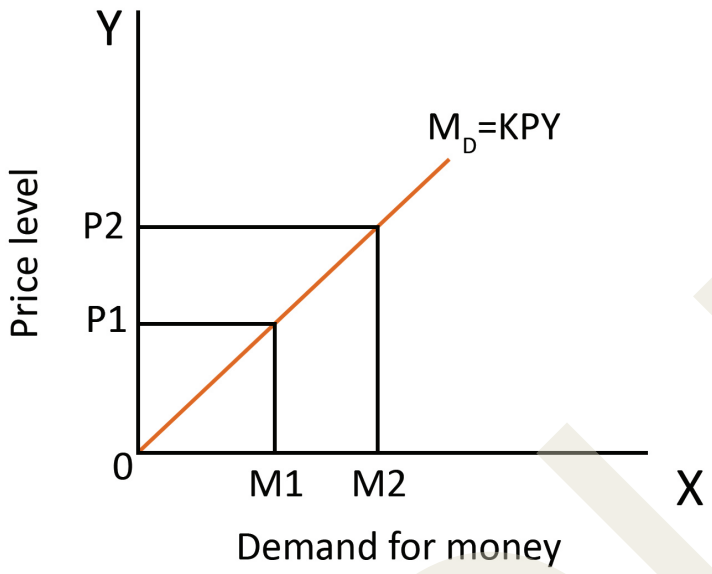

Fig. 6.2.1 Cambridge Theory

6.2.2 Liquidity Preference Theory by Keynes

John Maynard Keynes, in his work "*The General Theory of Employment, Interest and Money*," explains a new version of the demand for money. Apart from the classical theory, Keynes argues that people tend to hold cash in liquid form. Keynes explained *Liquidity* as "*more certainly realizable at short notice without loss*" (Treatise of Money). Liquidity is the capability of converting any asset into cash. Keynes believed that money is the most liquid economic unit. According to Keynes, the demand for money is the willingness to hold money in liquid form.

Keynes distinguishes three motives for money. They are the following:

- Transaction motive
- Precautionary motive
- Speculative motive

Transaction motive : Keynes postulated that people hold money mainly for transaction purposes. Money is needed for day-to-day transactions. As money income increases, people desire to hold more money as liquid cash. Thus, it is proportional to the money income earned.

Transaction demand for money is also called *need-based money* because people need money or '*active cash balance*' to meet daily expenses. Hence, it is a positive function

of money income; the transaction demand for money is:

$$M_T = f(Y)$$

Keynes postulates that in the short run, transaction demand for money and money income are directly and proportionally related.

Precautionary motive: People hold an *idle cash balance* to meet unforeseen expenses. The future is uncertain; thus, as a means of safety, a considerable amount is kept to meet unexpected emergencies like disease, natural disasters, accidents, etc.

Precautionary demand for money is a direct function of money income. This is the same as the transaction motive.

$$M_P = f(Y)$$

As money income increases, people hold more money in liquid form as a precaution.

Speculative motive : Keynes introduced the role of the rate of interest and money income. This interpretation is entirely new from classical assumptions. People decide to hold money based on the expectations of future bond prices.

Keynes argues that the market rate of interest and prices of bonds have an inverse relationship. If the market rate of interest is high, the price of bonds is expected to decrease, and people tend to sell bonds and hold money in liquid form. If the market rate of interest is low, the bond price tends to rise; thus, people buy more bonds because bonds are considered an asset. Here, people expect that buying bonds will give additional returns in the future than holding money as idle. Thus, liquidity preference is high at a lower interest rate, and at higher interest rates, people desire to invest more money in bonds expecting future returns. The inverse relation can be expressed as:

$$MS = f(r)$$

r is the rate of interest. The inverse relation between the rate of interest and speculative demand for money results in the situation of *liquidity trap* sometimes. The negative relationship can be illustrated as follows:

6.3.3 Liquidity Trap

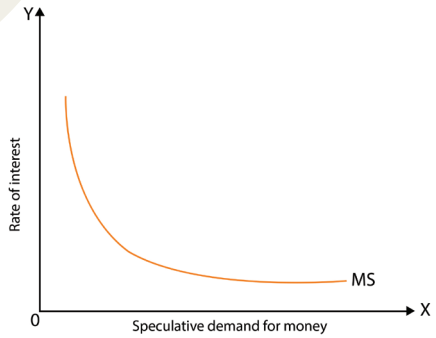

Fig. 6.2.2 Speculative Demand

The downward sloping curve shows that speculative demand for money has an inverse relation with the rate of interest.

Total demand for money is the sum total of transaction motive, precautionary motive, and speculative demand for money.

John Maynard Keynes introduced the phenomenon of the liquidity trap. This is a contradictory situation where interest is very low and cash savings are very high. At a lower interest rate, people choose to avoid buying bonds because they expect that the interest rate will rise in the near future and the price of bonds will go down. Thus, people desire to hold money in hand only.

As we know, bonds and interest rates have an inverse relationship. Knowing a future decline in asset value, people don't buy any bonds. They prefer to hold money as idle balance. In this situation, when people expect a future rise in interest rates, the speculative demand for money is perfectly elastic. If we illustrate this with a graph, the horizontal path of the demand curve is the liquidity trap.

This is a time when monetary policy is highly ineffective because the interest rates are so low and people are not willing to invest in bonds or other investments. The liquidity trap is subjective in nature. It is highly influenced by future expectations of people. This situation arises from the choice of people to hoard cash rather than investing in bonds. The liquidity trap affects not only the bond market but also several other business areas too. Example: The global financial crisis of 2008 was a similar situation.

The liquidity trap situation can be illustrated by the following diagram. The perfectly elastic portion shows that asset holders will acquire maximum idle cash balances rather than investing in bonds.

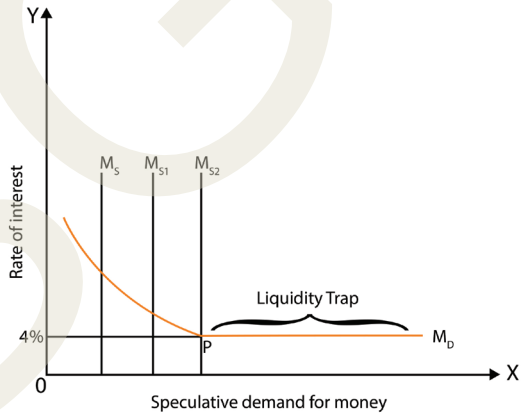

Fig. 6.2.3 Liquidity Trap

The horizontal part of M_D after M_{S2} is the liquidity trap position. It is perfectly elastic, and changes in the interest rates couldn't make any difference to solve the problem. That's why monetary policy is ineffective at this point. The policy of general wage cuts is also ineffective at this point.

Recap

- The classical theory of money postulates that money is a medium of exchange and that total money demanded and the general price level have a direct and proportional relationship
- Classical economists believed that real variables and money variables are separable
- A liquidity trap is a situation where demand is perfectly elastic
- J. M. Keynes for the first time discussed the role of interest in money demand
- Speculative demand for money and the rate of interest have an inverse relationship

Objective Questions

1. Who introduced cambridge version of quantity theory of money?
2. Who introduced the quantity theory of money?
3. What is the sole purpose of money as per Fisher?
4. Who introduced neutrality of money ?
5. Who postulated the liquidity preference theory?
6. What did Keynes argue about the relation between interest and money demand?
7. What type of elastic phenomenon is a liquidity trap?

Answers

1. Alfred Marshall and A C Pigou
2. Irving Fisher
3. Money is a medium of exchange
4. Classicals
5. John Maynard Keynes
6. Keynes argued that the relationship between interest rates and demand for money is non-linear
7. Perfectly interest elastic (demand for money becomes infinitely elastic at very low interest rates)

Assignments

1. State the main equation of the Cambridge cash-balance approach and explain how it shows the relationship between money demand and income.
2. Present the key differences between the Cambridge version of the quantity theory and Fisher's version with reference to the assumptions about money demand.
3. Describe the concept of liquidity preference in Keynesian economics and examine the three motives for holding money.
4. Illustrate the working of the liquidity trap situation using a money demand curve and interest rate relationship.
5. Assess the implications of a liquidity trap on the effectiveness of monetary policy during periods of economic stagnation.

Reference

1. Samuelson, Paul A. and William Nordhaus, *Economics*, McGraw Hill, 19th Ed.
2. Shapiro, Edward, *Macroeconomic Analysis* – Galgolia Publications, New Delhi.
3. Blanchard, Oliver *Macroeconomics* Sixth Edition Pearson, 2017.

Suggested Reading

1. N. Gregory Mankiw; *'Macroeconomics'*
2. Paul A. Samuelson and William Nordhaus; '*Economics*'
3. Richard T. Froyen (2005) *Macroeconomics*, Pearson Education Asia, 2nd edition.

MODEL QUESTION PAPER I

SREENARAYANAGURU OPEN UNIVERSITY

QP CODE: ……

Reg. No : …….....
Name : ……...

FIFTH SEMESTER - BA ECONOMICS EXAMINATION
DISCIPLINE CORE – 05 - B21EC05DC
MACROECONOMICS I
(CBCS - UG)
2022-23 - Admission Onwards

Time: 3 Hours **Max Marks: 70**

Section A - Objective Type Questions

Answer any 10 questions. Each question carries 1 mark

(10 X 1=10 marks)

1. What is the shape of the aggregate supply curve beyond the full employment level?
2. Define GDP deflator.
3. What is balanced budget multiplier?
4. What kind of variable is saving, stock or flow?
5. Write the formula for the linear consumption function.
6. What does the equation MV = PT represent in Fisher's theory?
7. Who are the two economists associated with the Cambridge version of the Quantity Theory of Money?
8. Write the formula for money supply (M).
9. What is the formula to calculate Net National Product at Factor Cost (NNPFC)?
10. What is the main objective of contractionary monetary policy?
11. Name any one macroeconomic goal.
12. What is the classical assumption about the role of government in the economy?

13. Name the index used in India to measure wholesale inflation.

14. What is the term for the idea that money affects only nominal and not real variables in the long run?

15. What is the formula of the production function in the short run under classical theory?

Section B- Very Short Answer

Answer any 10 questions. Each question carries 2 marks

(10X2=20 marks)

16. What is disguised unemployment? Explain with an example.

17. Define static analysis in macroeconomics with an example.

18. What is meant by 'sticky wages and prices' in Keynesian theory?

19. How does a tax cut influence national income according to the tax multiplier?

20. What is meant by mixed income in the context of the income method?

21. Define liquidity according to Keynes.

22. What is meant by fiat money?

23. Explain the concept of depreciation in the context of national income.

24. State contractionary monetary policy.

25. Define the neutrality of money according to classical theory.

26. What does the classical theory state about the natural state of employment in the economy?

27. What are real and nominal variables as per the classical dichotomy?

28. Mention any two assumptions underlying Say's Law of Markets.

29. What is the relationship between money income and transaction demand for money?

30. Define the simple Keynesian model of income determination.

Section C- Short Answer

Answer any 5 questions. Each question carries 4 marks.

(5X4=20 marks)

31. Describe how Fisher's Equation of Exchange explains the relationship between money supply and price level.

32. Explain the determination of effective demand.

33. Describe the role of the GDP deflator in distinguishing between real and nominal GDP.

34. Discuss the concept of neutrality of money using the AD–AS framework and explain how this concept supports the classical view of non-intervention.

35. Describe the speculative motive for holding money and its relation to the rate of interest.

36. Discuss about the tax multiplier.

37. Explain the concept of saving–investment equality as presented in classical economics. How does the interest rate help maintain equilibrium?

38. What are the main objectives of monetary policy in India?

39. Explain the working of the investment multiplier with an example.

40. Discuss various types of unemployment.

Section D- Long Answer/Essay

Answer any 2 questions. Each question carries 10 marks.

(2X10=20 marks)

41. Explain the various quantitative and qualitative instruments of monetary policy used by the Reserve Bank of India.

42. Critically evaluate the classical theory of employment in light of Keynes's criticisms.

43. What is macro static analysis? How does it differ from dynamic analysis and why is it useful despite its limitations?

44. Discuss the various national income aggregates such as GDP, GNP, NNP, and their forms at factor cost and market price. How are they interrelated?

MODEL QUESTION PAPER II

SREENARAYANAGURU OPEN UNIVERSITY

QP CODE: ……

Reg. No : …….....
Name : ……...

FIFTH SEMESTER - BA ECONOMICS EXAMINATION
DISCIPLINE CORE – 05 - B21EC05DC
MACROECONOMICS I
(CBCS - UG)
2022-23 - Admission Onwards

Time: 3 Hours **Max Marks: 70**

Section A - Objective Type Questions

Answer any 10 questions. Each question carries 1 mark

(10 X 1=10 marks)

1. Who introduced the concept of the multiplier in macroeconomics?
2. Who is regarded as the father of Modern Macroeconomics?
3. What does GVA stand for in national income accounting?
4. Name the economist who first formulated the Equation of Exchange.
5. What is the formula for investment multiplier in terms of MPC?
6. Name the three methods used to estimate national income.
7. What does the term 'macro statics' refer to in economics?
8. Which variable in the consumption model is considered endogenous?
9. What is the full form of CRR?
10. Which sector includes activities like tourism and IT services?
11. Which instrument is used by the RBI to manage liquidity through buying and selling of government securities?
12. What is the full form of GDP?
13. State Say's Law of market.
14. What is the main motive behind speculative demand for money according to Keynes?
15. Which economist strongly criticised the classical theory in his work, The General Theory of Employment, Interest and Money?

Section B- Very Short Answer

Answer any 10 questions. Each question carries 2 marks

(10X2=20 marks)

16. Define inflation.
17. State two key propositions of Keynes's Psychological Law of Consumption.
18. What is meant by redistribution of income?
19. Distinguish between APC and MPC with formulas.
20. Mention any two items that are excluded when calculating national income using the income method.
21. Define the currency deposit ratio (CDR) and write its formula.
22. What is meant by Personal Disposable Income? How is it calculated?
23. Mention two functions of the Reserve Bank of India as a central bank.
24. What is meant by wage and price flexibility in classical economics?
25. Mention any two assumptions of Fisher's Quantity Theory of Money.
26. What is speculative demand for money?
27. How does classical theory explain equilibrium in the labour market?
28. What is Keynes's main criticism of Say's Law?
29. Differentiate between Nominal GDP and Real GDP.
30. What is meant by 'leakages' in the multiplier process?

Section C- Short Answer

Answer any 5 questions. Each question carries 4 marks.

(5X4=20 marks)

31. Differentiate between induced and autonomous investment using examples.
32. Explain the Keynesian concept of speculative demand for money. How is it influenced by interest rates?
33. Discuss key challenges faced in accurately measuring national income.
34. Explain how Gross Value Added (GVA) helps in understanding sectoral contributions to GDP.
35. Describe the determinants of investment in Keynesian economics
36. Explain the implications of the Classical Dichotomy for monetary policy.

37. Describe the Quantity Theory of Money and how it explains money market equilibrium in classical macroeconomics.

38. Explain how the Cash Reserve Ratio (CRR) functions as a monetary policy tool.

39. Distinguish between stock and flow variables with suitable examples.

40. Explain the differences between the value added, income, and expenditure methods of estimating national income.

Section D- Long Answer/Essay

Answer any 2 questions. Each question carries 10 marks.

(2X10=20 marks)

41. Explain in detail the credit creation process of commercial banks. How does the money multiplier operate in a fractional reserve banking system?

42. Discuss the five main macroeconomic goals. Why are they considered essential for a well-functioning economy?

43. Compare and contrast the Cambridge version of the Quantity Theory of Money with Fisher's approach.

44. Discuss the key propositions of Say's Law and evaluate its implications, including the criticisms made by Keynes.

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Macroeconomics I

COURSE CODE: B21EC05DC

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