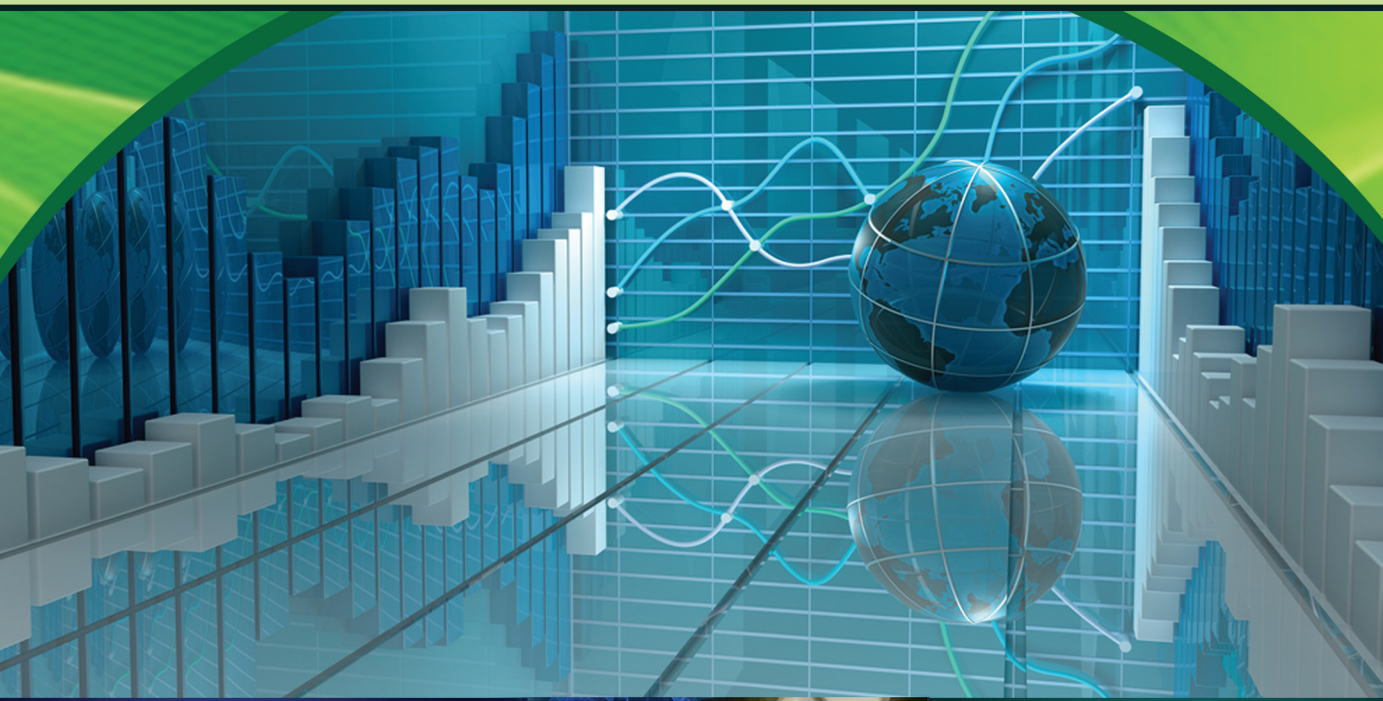
MACRO ECONOMICS

B.A.-1st Yr.CBCS - Semester-II









Nalgonda Economics Forum

Website : nalgondaeconomicsforum.org



A teacher par excellence

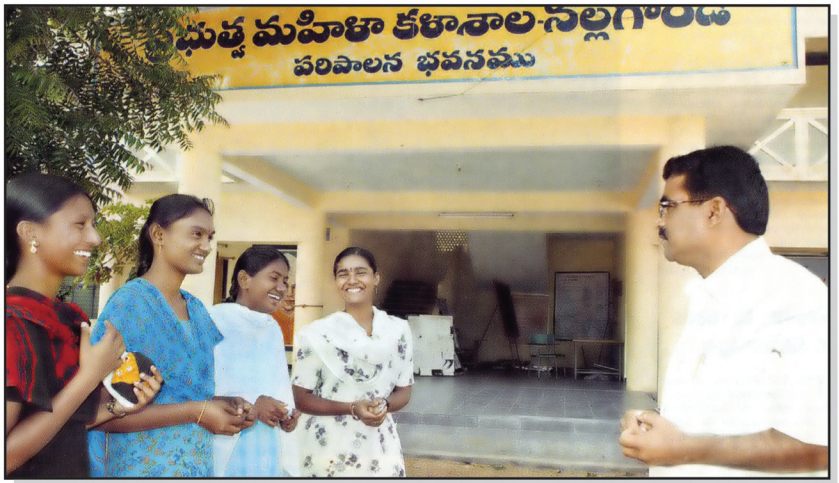
Thanks to the free coaching imparted by Akkenapalli Meenaiah, students from rural background can now hope to secure a seat in Osmania University

Getting a seat in any post graduation course in Osmania university campus is always a tough task for rural graduates. Those who are keen to get a seat there have to spend money for tailor-made coaching classes.

Realising the need to impart free coaching, Akkenapalli Meenaiah, lecturer in Economics, Government Women's Degree College, Nalgonda, offered special training for students of Economics in the district. Indeed the effort yielded good results and seven out of 25 students got seats in PG courses.

While Maroju Kavita, a bright student of the Women's Degree College could secured eighth rank, three of her friends — Koorella Himavathi, Chintapalli Sailaja and Cherukuri Seshu Kumari — got seats in the OU campus, Hyderabad. They are all eligible to get a hostel facility thus getting a wonderful opportunity to prepare for competitive exams. Five other students are all set to get seats in other institutions. "But for Mr. Meenaiah coaching, I would not fared well in the entrance test," Ka-vitha said. The convener of the Nalgonda Economics Forum, Mr. Meenaiah said that a small initiative taken by him yielded very good result. He opted out of spot valuation to train his students to prepare for the entrance test. "I might have lost about Rs.10,000 for spending my time with the students but the ranks they got gave me an immense satisfaction," he maintained. Asked for the secret of success of his mission, Mr. Meenaiah, a native of Gopulaipallypalli in Narketpally mandal, said: "Every teacher must strive hard to - create interest on the subject among the students. Motivation works wonders among the rural students." It is remains to be seen whether other teachers emulate this concerned lecturer or not.

- S. RAMU, in Nalgonda



ALL SMILES : A. Meenaiah, lecturer in economics, with his students, all rank holders in Osmania University M.A.Economics entrance test in Nalgonda. - PHOTO: NAGARA GOPAL

MACRO ECONOMICS

B.A. I - Year (2nd Semester)

Revised Syllabus : 2025 - 26

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Foreword



The Nalgonda Economics Forum initiated its activity on the 12th of January 2007 and was subsequently registered on 10th May, 2013 with the registered number 297/13. This purely service oriented free coaching institution primarily aimed at training up students belonging to the rurally poor and socially and economically backward classes for admission through entrance into MA Economics course, but subsequently expanded to imparting training in a variety of areas of competitive examinations. When it came into existence some 19 years ago, almost every one of not more than ten students got selected to MA Economics course in different universities. And the Forum has now gradually, year after year, grown into fetching admission into PG Economics course to a bulky strength of as many as 800 candidates over these years. It is also to be noted that candidates trained at this Forum stood in the first rank in the PG Economics entrance examinations at Osmania University in 2009 and both at the Osmania and the Kakatiya universities subsequently in 2016, 2017 and 2018. The students of Nalgonda Economics Forum brought in the top three: 1st, 2nd and 3rd ranks followed by 7th, 8th, 9th and 10th ranks in CPGET -2020. In the year 2022 our students bagged state 1st, 7th and 10th ranks. We are happy to announce our forum student 10th ranker of CPGET-2022 Chanda Pranitha was awarded Osmania University Gold Medal in Economics for the year 2023-24. In the CPGET 2025 results released on 8th September, 2025, our forum got excellent results, first rank secured by S.Bhuvana Laxmi, Second Rank Secured by N.Ajay, Third Rank secured by A. Manasa and 6th Rank secured by Y. Lokesh. And our forum students also secured 12th, 13th, 14th, 17th & 20th Ranks.

As part of the extended areas of training programmes in different areas of competitive examinations, in addition to the basically mooted out MA Economics entrance training, the following are the achievements to our credit. A large number of students trained here qualified for SET and NET and **10 members of forum students were awarded Ph.D. in Economics.** In the year 2024, **41 candidates of our forum were selected as Govt Junior Lecturers, 10 candidates were selected as Degree Lecturers and 12 candidates were selected as Junior Lecturers at Residential Degree & Junior Colleges** respectively in the state. A notable number of over 100 candidates trained here are now working as Economics faculty in different private unaided junior and degree colleges.

The Forum so far brought out Six Text Books in English and Three Text Books in Telugu for B.A Economics with ISBN number for the undergraduate students in the state, in tune with the choice based credit system that has come into vogue with the academic year 2019-20. Now we have brought Micro Economics 1st semester and Macro Economics Second Semester Text Book with ISBN number, as per new syllabus (2025-26) which is designed incorporating Artificial Intelligence concepts which are ruling present world Economy.

It is also to be mentioned here that the Forum, with a view to be in tune with the changing examination patterns year after year, has been keeping on updating itself and catering to the newest needs of the examination goers. It is particularly in this process that, apart from imparting training directly in classroom situations, Forum created a website of its own to help the students face the computer-based tests, besides providing study material on-line, bringing to the doorsteps the latest relevant information that boosts up the students' morale and self-confidence. As has already been mentioned, Forum created a website of its own to help the students in ways more than one and started providing study material on-line. The Forum started YouTube channel on 17th April 2020 and as yet uploaded 600 video lessons on Economics subject. This Forum channel was monetized on 21st November 2020. As on 7th November 2026, the channel bagged 6006 subscribers.

Another innovative achievement of the Nalgonda Economics Forum is facilitating Google Meet & Zoom meeting platforms, especially at a situation of disrupted communication on account of the prevalence of Covid -19 pandemic havoc. Thus Forum successfully conducted under this roof CPGET-2020, CPGET-2021, CPGET-2022, CPGET-2023, CPGET-2024, CPGET-2025 and Junior Lecturers & Degree Lecturers coaching classes for Economics.

As mentioned in one of the columns above, there has been a sustained growth of the student potentiality since the inception of the Forum. And, besides the unhindered growth in the size of the student strength, there has been a proportionately parallel increase of the achievements of the goals the Forum has been relentlessly endeavouring to meet year after year. More specifically, the training activity at the Forum has been continuing over so many years in no way uninterrupted at any moment of time. That there has always been an affirmatively evinced confidence in the reliability of our commitment to the interests and aspirations of the students as well as to a scientifically reasoned approach to the curriculum activity stands proof positive to the continued scalability and sustainability of the motto before the Forum and its organizers.

Every year the Forum is incurring expenditure around Rs 70,000 (Seventy Thousand) to maintain Website, Zoom meet and software AMC, to meet this expenditure, Forum decided to raise around 10,00,000 (Ten Lakhs) for FDR from enrolling Life Members in the Forum. So far, Rs 5,33,198 has been contributed from 179 respected Life Members.

We are happy to note that this year's (2025) CPGET-2025 online coaching expenditure **Rs. 70,000 is jointly shared by NLN Foundation represented by Nati Srinivasulu NRI (Village Velminedu, Mandal Chityal Dist Nalgonda) & Serve the Pupils Foundation represented by Nati Ganesh. Our forum is highly thankful to them.** However, the recurrent source of funds is the Mallu Venkata Narsimhareddy (MVN) Vignana Kendram Trust. The same Trust, apart from facilitating total accommodational facilities for classrooms, library, etc, also provides from time to time all infrastructural facilities in a five-storied building of its own situated in the town of Nalgonda.

- Dr. Akkenapally Meenaiah, M.A, M.Phil, Ph.D.
President Nalgonda Economics Forum

B.A. Macro Economics : Semester - II

Revised Syllabus 2025 - 26

Module-I : INTRODUCTION MACRO ECONOMICS

Concept of Circular Flow of Incomes - Two sector model - Three sector model -Four sector model - Significance of the circular flow of income - National Income Analysis - Concepts of National income - Components of National income - Methods of Measurement National income; Product method, Income method, Expenditure method - Role of Big Data - Role of Big Data in accounting National income - Challenges of Using Big Data - Importance, difficulties and Limitations in the Estimation of National Income

Module - II : THEORIES OF INCOME AND EMPLOYMENT

Keynesian Theory of Income and Employment - Concepts of ASP & ADP - Effective demand-concept and schedule - Effective demand-graphical representation - Behavioural Macroeconomics - Important concepts and principles of Behavioural Macroeconomics - Impact of Automation on Employment - Consumption Function - Average Propensity to Consume (APC) - graph-simple illustrations - Marginal Propensity to Consume (MPC) - graph-simple illustrations - Factors Determining Consumption Function - Savings Function - Average Propensity to Save (APS)-graph-simple illustrations - Marginal Propensity to Save (MPS) - graph-simple illustrations

Module - III : INVESTMENT

Investment - Types of Investment - Determinants of Level of Investment - Marginal Efficiency of Capital (MEC) - MEC-meaning-definition-formula Investment demand schedule-MEC curve Illustrations - Marginal Efficiency of Investment - Green Investment and sustainable capital - Impact of Digital Assets on Investment - Concept of Behavioural Finance in Investment decisions

Module - IV : SUPPLY OF MONEY & DEMAND FOR MONEY

Functions and Classification of Money - Barter system of exchange and its defects - Evolution of money - Classification of money - Functions of money - Money Supply Measures of Money Supply in India CBDCs (Central Bank Digital currencies), Role of FinTech - Quantity Theories of Money - Fisher's Quantity Theory of Money - Cambridge Versions of Quantity Theory of Money - Mobile payments and Blockchain in Financial Transactions

Module - V : INFLATION & BUSINESS CYCLES FLUCTUATIONS

Inflation - Inflation-Meaning, definitions - Types of Inflation-Creeping, walking, running and hyper(galloping) Inflation - Demand-pull and cost-push Inflation - Causes of Inflation- Causes for excess demand - Causes for shortage of supply - Measurement of Inflation - Role of AI in forecasting Inflation - Effects of Inflation - Measures to Control Inflation - Concepts of Phillips Curve, Deflation and Stagflation - Concept of Business Cycle Fluctuations in Digital Markets - Role of AI & Big Data in predicting recessions

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Module

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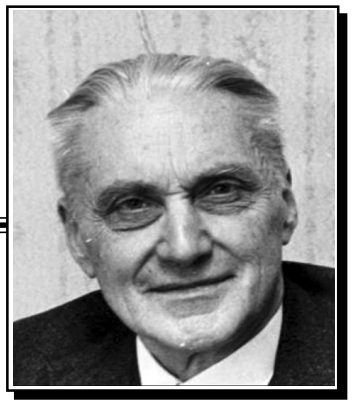

RAGNAR FRISCH

3rd March, 1895 - 31st Jan 1973

Income Analysis: Concepts and Components

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1.1 Meaning and Scope of Macroeconomics

Macroeconomics is the study of aggregates or averages covering the entire economy, such as total employment, national income, national output, total investment, total consumption, total savings, aggregate supply, aggregate demand, and general price level, wage level, and cost structure.

In other words, it is aggregative economics which examines the interrelations among the various aggregates, their determination and causes of fluctuations in them. Thus in the words of Professor Ackley, "Macroeconomics deals with economic affairs in the large; it concerns the overall dimensions of economic life. It looks at the total size and shape and functioning of the "elephant" of economic experience, rather than working or articulation or dimensions of the individual parts. It studies the character of the forest, independently of the trees which compose it." Macroeconomics is also known as the theory of income and employment, or simply income analysis. It is concerned with the problems of unemployment, economic fluctuations, inflation or deflation, international trade and economic growth. It is the study of the causes of unemployment, and the various determinants of employment. In the field of business cycles, it concerns itself with the effect of investment on total output, total income, and aggregate employment. In the monetary sphere, it studies the effect of the total quantity of money on the general price level. In international trade, the problems of balance of payments and foreign aid fall within the purview of macroeconomic analysis. Above all, macroeconomic theory discusses the problems of determination of the total income of a country and causes of its fluctuations. Finally, it studies the factors that retard growth and those which bring the economy on the path of economic development.

Macroeconomics and microeconomics are not contradictory with respect to economic analysis. They are two sides of the same coin. Microeconomics is the study of the economic actions of individuals and small groups of individuals. The "study of particular firms, particular households, individual prices, wages, incomes, individual industries, particular commodities." But macroeconomics "deals with aggregates of these quantities; not with individual incomes but with the national income, not with individual prices but with the price levels, not with individual output but with the national output."

1.2. Circular Flow of Income in a Two Sector Economy

The circular flow of income and expenditure refers to the process whereby the national income and expenditure of an economy flow in a circular manner continuously through time. The various components of national income and expenditure such as saving, investment, taxation, government expenditure, exports, imports, etc. are shown on diagrams in the form of currents and cross-currents in such a manner that national income equals national expenditure.

We begin with a simple hypothetical economy where there are only two sectors, the household and business. The household sector owns all the factors of production, that is, land, labour and capital. This sector receives income by selling the services of these factors to the business sector.

The business sector consists of producers who produce products and sell them to the household sector or consumers. Thus the household sector buys the output of products of the business sector. The circular flow of income and expenditure in such an economy is shown in Figure 1.1 where the product market is shown in the upper portion and the factor market in the lower portion. In the product market, the household sector purchases goods and services from the business sector while in the factor market the household sector receives income from the former for providing services. Thus the household sector purchases all goods and services provided by the business sector and makes payments to the latter in lieu of these.

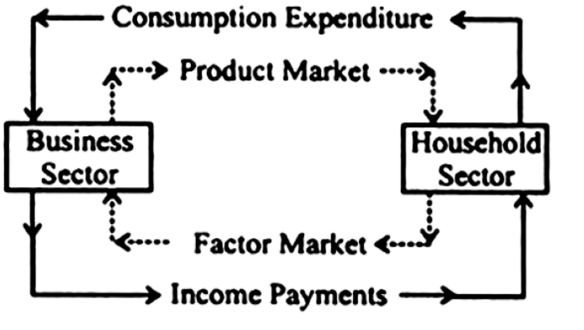

Figure No. 1.1

The business sector, in turn, makes payments to the households for the services rendered by the latter to the business, wage payments for labour services, interest for capital, and rent for land and profit for entrepreneur supplied, etc. Thus payments go around in a circular manner from the business sector to the household sector and from the household sector to the business sector, as shown by arrows in the outer portion of the figure.

There are also flows of goods and services in the opposite direction to the money payments flows. Goods flow from the business sector to the household sector in the product market, and services flow from the household sector to the business sector in the factor market, as shown in the inner portion of the figure. These two flows give GNP = GNI.

1.3 Circular Flow in a Three- Sector Closed Economy

So far we have been working on the circular flow of a two-sector model of an economy. To this we add the government sector so as to make it a three-sector closed model of circular flow of income and expenditure. For this, we add taxation and government purchases (or expenditure) in our presentation. Taxation is a leakage from the circular flow and government purchases are injections into the circular flow. First, take the circular flow between the household sector and the government sector. Taxes in the form of personal income tax and commodity taxes paid by the household sector are outflows or leakages from the circular flow.

But the government purchases the services of the households, makes transfer payments in the form of old age pensions, unemployment relief, social welfare schemes, etc., and also spends on them to provide certain social services like education, health, housing, water, parks and other facilities. All such expenditures by the government are injections into the circular flow. Next take the circular flow between the business sector and the government sector. All types of taxes paid by the business sector to the government are leakages from the circular flow. On the other hand, the government purchases all its requirements of goods of all types from the business sector, gives subsidies to firms in order to encourage their production. These government expenditures are injections into the circular flow. Now we take the household, business and government sectors together to show their inflows and outflows in the circular flow. As already noted, taxation is a leakage from the circular flow. It tends to reduce consumption and saving of the household sector. Reduced consumption, in turn, reduces the sales and incomes of the firms. On the other hand, taxes on business firms tend to reduce their investment and production.

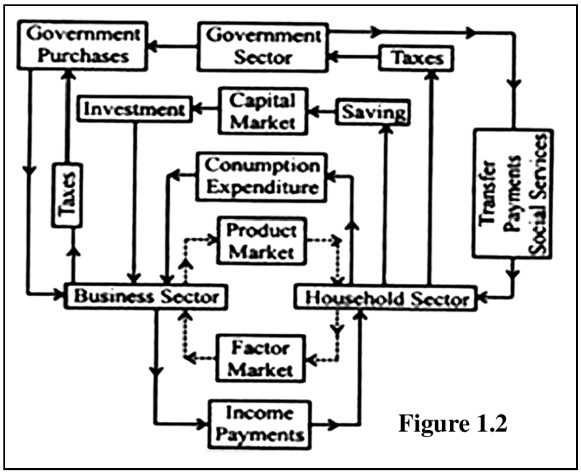

Figure 1.2

The government offsets these leakages by making purchases from the business sector and buying services of the household sector equal to the amount of taxes. Thus total sales again equal production of firms. In this way, the circular flows of income and expenditure remain in equilibrium. Figure 1.2 shows that taxes flow out of the household and business sectors and go to the government.

Now the government makes investment and for this purchases goods from firms and also factors of production from households. Thus government purchases of goods and

services are an injection in the circular flow of income and taxes are leakages. If government purchases exceed net taxes then the government will incur a deficit equal to the difference between the two, i.e., government expenditure and taxes. The government finances its deficit by borrowing from the capital market which receives funds from households in the form of saving. On the other hand, if net taxes exceed government purchases the government will have a budget surplus. In this case, the government reduces the public debt and supplies funds to the capital market which are received by firms.

1.4 Foreign Sector - Circular Flow in a Four-sector Open Economy

So far the circular flow of income and expenditure has been shown in the case of a closed economy. But the actual economy is an open one where foreign trade plays an important role. Exports are an injection or inflows into the economy. They create incomes for the domestic firms. When foreigners buy goods and services produced by domestic firms, they are exports in the circular flow of income. On the other hand, imports are leakages from the circular flow. They are expenditures incurred by the household sector to purchase goods from foreign countries. These exports and imports in the circular flow are shown in Figure 1.3. Take the inflows and outflows of the household, business and government sectors in relation to the foreign sector. The household sector buys goods imported from abroad and makes payment for them which is a leakage from the circular flow. The households may receive transfer payments from the foreign sector for the services rendered by them in foreign countries.

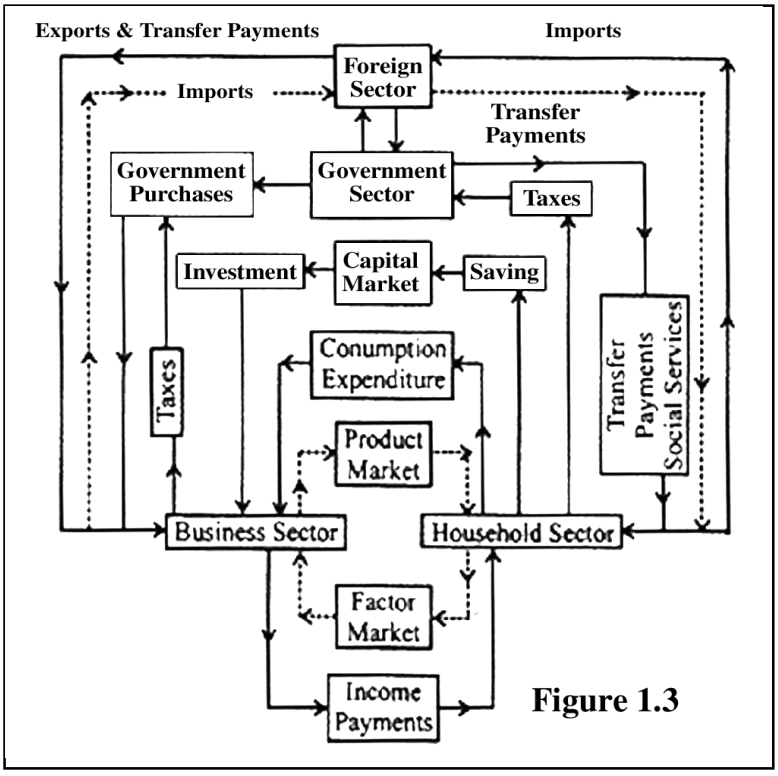

Figure 1.3

On the other hand, the business sector exports goods to foreign countries and its

receipts are an injection in the circular flow. Similarly, there are many services rendered by business firms to foreign countries such as shipping, insurance, banking, etc. for which they receive payments from abroad. The business sector also receives royalties, interests, dividends, profits, etc. for investments made in foreign countries. On the other hand, the business sector makes payments to the foreign sector for imports of capital goods, machinery, raw materials, consumer goods, and services from abroad. These are the leakages from the circular flow. Like the business sector, modern governments also export and import goods and services, and lend to and borrow from foreign countries.

Similarly, the government receives payments from foreigners when they visit the country as tourists and for receiving education, etc. and also when the government provides shipping, insurance and banking services to foreigners through the state-owned agencies. It also receives royalties, interest, dividends etc. for investments made abroad. These are injections into the circular flow. On the other hand, the leakages are payments made for the purchase of goods and services to foreigners. Figure 1.3 shows the circular flow of the four-sector open economy with saving, taxes and imports shown as leakages from the circular flow on the right hand side of the figure, and investment, government purchases and exports as injections into the circular flow on the left side of the figure. Further, imports, exports and transfer payments have been shown to arise from the three domestic sectors-the household, the business and the government. These outflows and inflows pass through the foreign sector which is also called the "Balance of Payments Sector."

If exports exceed imports, the economy has a surplus in the balance of payments. And if imports exceed exports, it has a deficit in the balance of payments. But in the long run, exports of an economy must balance its imports. This is achieved by the foreign trade policies adopted by the economy.

1.5 Significance of the Circular Flow

The concept of the circular flow gives a clear-cut picture of the economy. We can know whether the economy is working efficiently or whether there is any disturbance in its smooth functioning. As such, the circular flow is of immense significance for studying the functioning of the economy and for helping the government in formulating policy measures.

1. **Study of Problems of Disequilibrium:** It is with the help of circular flow that the problems of disequilibrium and the restoration of equilibrium can be studied.
2. **Effects of Leakages and Inflows:** The role of leakages enables us to study their effects on the national economy. For example, imports are a leakage out of the circular flow of income because they are payments made to a foreign country. To stop this leakage, government should adopt appropriate measures so as to increase exports and decrease imports.
3. **Link between Producers and Consumers:** The circular flow establishes a link between producers and consumers. It is through income that producers buy the services of the factors of production with which the latter, in turn, purchase goods from the producers.
4. **Inflationary and Deflationary Tendencies:** Leakages or injections in the circular flow disturb the smooth functioning of the economy. For example, saving is a leakage out of the expenditure stream. If saving increases, this depresses the circular flow of income. This tends to reduce employment, income and prices, thereby leading to a deflationary process in the economy. On the other hand, consumption tends to increase employment, income, output and prices that lead to inflationary tendencies.
5. **Basis of the Multiplier:** Again, if leakages exceed injections in the circular flow, the total income becomes less than the total output. This leads to a cumulative decline in employment, income, output, and prices over time. On the other hand, if injections into the circular flow exceed leakages, the income is increased in the economy. This leads to a cumulative rise in employment, income, output, and prices over a period of time. In fact, the basis of the Keynesian multiplier is the cumulative movements in the circular flow of income.
6. **Importance of Monetary Policy:** The study of circular flow also highlights the importance of monetary policy to bring about the equality of saving and investment in the economy.
7. **Importance of Trade Policies:** Similarly, imports are leakages in the circular flow of money because they are payments made to a foreign country. To stop it, the government adopts such measures as to increase exports and decrease imports. Thus the circular flow points toward the importance of adopting export promotion and import control policies.

1.6 Concepts of National income

In the measurement of national income there are various situations which we will have to study and they are known as concepts of national income. These concepts have their significance in national income accounting. Important concepts have been discussed here under:

1. Gross National Income or Product (GNP): Gross National income is the money value of all final goods and services produced by the normal residents of a country, within its domestic territory and abroad. It includes net factor income earned from abroad. Thus difference between gross domestic product (GDP) and gross national product (GNP) at market prices arises due to the existence of 'net factor income from abroad'. The net factor income from abroad is the difference between factor incomes received (Receipts-R) from abroad by normal residents of a country for rendering services in other countries on the one hand and the factor incomes paid to the foreign residents (Payments-P) for factor services rendered by them in the domestic territory of a country on the other. Gross Domestic Product does not include net factor income from abroad (NFIA), whereas Gross National Product includes it. Gross National Product has the following components:

1. Value of final consumer goods and services produced in a year and consumed by the households which is denoted by consumption (C) by households.
2. Value of new capital goods produced and addition to the inventories of goods such as raw materials, unfinished goods and consumer goods produced but not sold during a year. This is called Gross Private Investment (I).
3. Value of output of Government which is taken to be equal to the value of purchases of goods and services by the Government which we denote by (G).
4. Net Exports (NX) which is equal to value of goods exported (X) minus the value of goods imported (M).
5. Net factor income from abroad = R – P

GNP = C + I + G + NX + NFIA (NX = (X – M), NFIA = (R – P).

2. Net National Product : In the process of production, we use up capital goods like machinery; they wear out or fall in value as a result of its use in the production. This fall in the value of fixed capital due to wear and tear is called depreciation. When we deduct depreciation from the gross national product we get net national product. NNP = GNP – Depreciation

3. Gross Domestic Product (GDP): Gross Domestic Product is defined as the total market value of all final goods and services produced annually within the domestic territory of a country. Two things must be noted in regard to gross domestic product. First, it measures the market value of annual output. Secondly, for calculating gross domestic product accurately, all goods and services produced in a given year must be counted once and not more than once.

In the estimation of Gross Domestic Product, no consideration is given to the fact as to whether the gross value of produce is with the combined efforts of only the people of the country or with the co-operation of the foreigners. But the product must be produced in the

country alone as the net earnings from abroad are excluded. GDP = C + I + G + NX or (X – M)

4. Net Domestic Product (NDP) : Another important concept associated with national income is net domestic product (NDP). In the production process, we consume or use up some fixed capital, i.e., the equipment, machinery, etc. the capital goods like machinery wear out or fall in value as a result of its use in the production. This fall in the value of fixed capital due to wear and tear is called depreciation. When charges for depreciation are deducted from the gross domestic product we get net domestic product. Net Domestic Product = NDP = GDP – Depreciation

5. Net National Product at factor Cost (NNPFC): Net National Product or Income at factor cost which is also simply called national income means the sum of all incomes earned by resource suppliers of land, labour, capital and entrepreneurial ability which go into the year's net production. The difference between national income at factor cost and net national income at market prices arises from the fact that indirect taxes and subsidies cause market prices of output to be different from the factor incomes resulting from it. Net National Product at Factor Cost =NNPFC = NNPMP – Indirect Taxes + subsidies

6. Personal Income: Personal income is the aggregate income received by the individuals of a country from all sources before payment of direct taxes in a year. It is derived from national income by deducting undistributed corporate profits, corporate taxes and employees' contributions to social security schemes. These three components are excluded from national income because they do not reach individuals and conversely some incomes which are received like transfer payments are not currently earned. Hence we must subtract from national income those three types of income which are earned but not received and add those incomes which are received but currently not earned. Therefore, Personal Income = National Income – Social Security Contribution – Undistributed Corporate Profits – Corporate Taxes + Transfer Payments

7. Disposable Income or Personal Disposable Income: Disposable income or personal disposable income is the actual income which can be spent on consumption because it is the income that accrues after direct taxes have actually been paid. Therefore, in order to obtain the disposable income, direct taxes are deducted from personal income. Thus, Disposable Income = Personal Income – Direct Taxes. But it should be remembered while calculating this income that the whole of the disposable income is not spent on consumption and a part of it is saved. Therefore, the disposable income is divided into consumption expenditure and saving. Thus, Disposable Income = Consumption Expenditure + Savings.

8. Per Capita Income: Per capita income refers to the average income of an individual in a particular year. It denotes the income received by an individual during a certain year in a country. In order to find out per capita income of a country in a certain year, we divide the national income of that country by the population of that country in that year.

$$\text{Per - Capita Income} = \frac{\text{National Income}}{\text{Population}}$$

1.7 Components of National income

National income is the total value of all final goods and services produced within a country's economy during a specific period, typically one year. It is a fundamental measure of a nation's economic performance and well-being. The components of national income can be understood through different measurement approaches.

I. Expenditure Approach

This method calculates national income by summing up all the spending on final goods and services in an economy. The key components are:

i) **Consumption (C):** Total spending by households on durable goods, non-durable goods, and services.

ii) **Investment (I):** Spending by businesses on capital goods (machinery, equipment, and buildings), changes in inventories, and residential construction.

iii) **Government Spending (G):** All expenditures by the government on goods and services, such as public infrastructure, defense, and salaries of government employees. This does not include transfer payments like social security or unemployment benefits.

iv) **Net Exports (X - M):** The difference between a country's total exports (X) and total imports (M). A trade surplus (X>M) adds to national income, while a trade deficit (M>X) subtracts from it.

The formula for Gross Domestic Product (GDP) using the expenditure approach is: $GDP = C + I + G + (X – M)$

II. Income Approach

This method calculates national income by summing up all the incomes earned by the factors of production (land, labor, capital, and entrepreneurship) in an economy. The main components are:

i) Wages and Salaries: Compensation paid to employees for their labor.

ii) Rent: Income earned from the use of land and other real assets.

iii) Interest: Income from lending capital, such as interest on loans and bonds.

iv) Profits: The income remaining for entrepreneurs after all other costs have been paid. This includes corporate profits and the income of unincorporated businesses.

The sum of these components gives us Net National Product at Factor Cost (NNP at FC), which is often referred to as National Income (NI): NI=Wages+Rent+Interest+Profits

1.8 Methods of Measurement National income

Since factor incomes arise from the production of goods and services, and since incomes are spent on goods and services produced, three alternative methods of measuring national income are possible.

1. Product Method or Value added Method : In this method the contribution of each enterprise to the generation of flow of goods and services is measured. Under this method the economy is divided into different industrial sectors such as agriculture, fishing, mining, construction, manufacturing, trade and commerce, transport, communications, insurance companies, lawyers, doctors, teachers and other services. Then the net value added at factor cost (NVAFC) by each productive enterprise as well as by each industry or sector is estimated. Measuring net value added at factor cost by each industry requires first to find out the value of output. An important estimate which we have to make in this method is to find out the value of various goods and services produced by enterprises in the domestic territory of a country. The quantity of goods and services produced by a particular enterprise multiplied by their market prices is called the value of output. By summing up the value of all producing enterprises in a given industry or sector we can obtain the value of output of the industry or sector. A major part of output of a firm or enterprise is sold in the market and termed as sales. The remaining part of output which is not sold in the accounting year is added to the stock of goods or inventories.

This method of calculating national income can be used where there exists a census of production for the year. In many countries, the data of production of only important industries are known. Hence this method is employed along with other methods to arrive at the national income. The one great advantage of this method is that it reveals the relative importance of the different sectors of the economy by showing their respective contributions to the national income.

$$Y = Q_{XP} + Q_{YP} + Q_{ZP} \ldots Q_{NP} - D$$

2. Income Method: This method approaches national income from distribution side. According to this method, the net income payments received by all citizens of a country in a particular year are added up, i.e., net incomes that accrue to all factors of production by way of net rents, net wages, net interest and net profits are all added together but incomes received in the form of transfer payments are not included in it. This method of estimating national income has the great advantage of clearly revealing the distribution of national income among the various different income groups such as landlords, owners of capital, workers and entrepreneurs. The data pertaining to income are obtained from different sources, for instance, from income tax department in respect of high income groups and in case of workers from their wage bills.

$$Y = R + W + I + Pr - Ti + SU$$

3. Expenditure Method: Expenditure method arrives at national income by adding up all expenditures made on goods and services during a year. Income can be spent either on consumer goods or capital goods. Again, expenditure can be made by private individuals and households or by government and business enterprises. Further people of foreign countries spend on the goods and services which a country exports to them. Similarly people of a country spend on imports of goods and services from other countries. According to this method, the total expenditure incurred by the society in a particular year is added together and includes personal consumption expenditure, net domestic investment, government expenditure on goods and services, and net foreign investment. This concept is based on the assumption that national income equals national expenditure.

1.9. Role of Big Data in Accounting National Income

Big data plays a transformative role in national income accounting by providing a wealth of information that enhances the accuracy, timeliness, and granularity of economic statistics. Traditionally, national income is measured using surveys and administrative data, but these methods often suffer from delays and are limited in scope. Big data offers a way to overcome these limitations by using massive, high-frequency, and diverse datasets. Here are some of the key roles of big data in this field:

I. Real-Time "Now casting" and Forecasting: Traditional methods of national income accounting, such as calculating Gross Domestic Product (GDP), often have a significant time lag. This means the data is already several months old by the time it's released. Big data sources, however, provide real-time or near real-time insights into economic activity. This allows for "now casting," which is the prediction of current economic conditions, as well as more accurate and timely forecasting.

1) **Credit card transactions:** By analyzing vast amounts of anonymized credit and debit card transaction data, economists can get a real-time picture of consumer spending, a major component of GDP.
2) **Satellite imagery:** High-resolution satellite images can be used to track economic activity, such as monitoring changes in the number of cars in a factory parking lot or the density of shipping containers in a port. This provides a real-time proxy for industrial production and trade.
3) **Web scraping:** Web scraping involves collecting data from websites. For example, scraping data from e-commerce sites can provide up-to-the-minute information on prices, helping to measure inflation more accurately. Similarly, analyzing online job postings can provide real-time insights into labor market trends.

II. Improved Data Granularity and Detail: Traditional national accounts provide a broad overview, but big data can offer a much more detailed and granular view of the economy. This allows for a deeper understanding of economic phenomena at a more localized or industry-specific level.

1) **Mobile phone data:** Anonymized and aggregated mobile phone data can be used to track population movements. This can provide insights into commuting patterns, tourism, and even internal migration, which can be useful for calculating regional economic output.
2) **Social media and sentiment analysis:** By analyzing social media posts, news articles, and other online text, economists can gauge consumer and business sentiment. A rise in positive sentiment, for example, could be an indicator of a future increase in consumer confidence and spending.

III. Filling Data Gaps and Enhancing Accuracy: Big data can supplement traditional data sources, filling in gaps where survey data is sparse or nonexistent. It can also be used to cross-verify and improve the accuracy of existing statistics.

1) **IoT (Internet of Things) data:** Data from smart devices, such as smart meters, can provide insights into household energy consumption, a component of household spending.
2) **Business data:** Corporations and businesses collect enormous amounts of transactional data, which can be used to generate more accurate statistics on sales, production, and supply chains. Accessing and leveraging this data can lead to more precise national accounts.

While the potential of big data is immense, its use also presents several challenges. These include:

1) **Data privacy and ethics:** The use of personal data, even when anonymized, raises significant privacy and ethical concerns.
2) **Data access and partnerships:** National statistical offices often need to form partnerships with private companies that own these massive datasets, which can be a complex process.
3) **Methodological challenges:** New analytical methods and models, often using machine learning and AI, are required to process and interpret these complex and unstructured datasets. The sheer volume and variety of big data can also introduce new types of biases.

1.10. Challenges of Using Big Data for National Income

Using big data for national income accounting offers many benefits, but it also presents significant challenges related to data quality, methodology, and privacy.

I. Data Quality and Relevance: Big data is often a byproduct of other processes and wasn't collected specifically for economic analysis. This can lead to a lack of veracity (accuracy and truthfulness) and representativeness.

1) **No standardized definitions:** The data may not align with the established definitions used in national income accounting, making it difficult to integrate with traditional data sources.
2) **Bias and Selection Issues:** Data from sources like social media or online transactions may only represent certain populations or sectors, leading to a biased view of the economy. For example, e-commerce data might underrepresent cash transactions or small, local businesses.
3) **Data Noise:** Big data sets can contain a lot of irrelevant or spurious information, which can lead to misleading conclusions if not properly filtered and analyzed.

II. Methodological and Technical Challenges: The sheer volume, velocity, and variety of big data require new analytical methods and technological infrastructure.

1) **Data Integration:** Combining diverse data sources (e.g., satellite imagery, social media posts, and credit card transactions) is a complex task. There are no clear standards for integrating these varied data types to create a coherent national income estimate.
2) **Computational Intensity:** Processing and storing massive datasets are computationally expensive and require significant investment in technology and skilled personnel.
3) **Lack of Causal Inference:** Big data is excellent for finding correlations and patterns, but it's often difficult to establish causal relationships. For national income, knowing why a variable is changing is as important as knowing that it is changing.

III. Privacy and Governance Concerns: The use of big data in national income accounting raises serious ethical and legal questions.

1) **Privacy Violations:** Using real-time, granular data about individual transactions or movements can compromise personal privacy. Statistical agencies must navigate legal frameworks and public concerns about how their data is being used.
2) **Data Access and Ownership:** Much of the valuable big data is owned by private corporations (e.g., Google, Amazon, Meta). Gaining reliable and continuous access to this data often requires complex public-private partnerships, which can be unstable and expensive.
3) **Transparency and Reproducibility:** The "black box" nature of some big data analysis techniques (like certain machine learning algorithms) can make it difficult to explain how a national income estimate was derived. This undermines the transparency and reproducibility that are essential for official statistics.

1.11. Importance of National Income Analysis

The national income data have the following importance:

1. **For the Economy:** National income data are of great importance for the economy of a country. These days the national income data are regarded as accounts of the economy, which are known as social accounts. These refer to net national income and net national expenditure, which ultimately equal each other. Social accounts tell us how the aggregates of a nation's income, output and product result from the income of different individuals, products of industries and transactions of international trade. Their main constituents are inter-related and each particular account can be used to verify the correctness of any other account.

2. **National Policies:** National income data form the basis of national policies such as employment policy, because these figures enable us to know the direction in which the industrial output, investment and savings, etc. change, and proper measures can be adopted to bring the economy to the right path.

3. **Economic Planning:** In the present age of planning, the national income data are of great importance. For economic planning, it is essential that the data pertaining to a country's gross income, output, saving and consumption from different sources should be available. Without these, planning is not possible.

4. **Economic Models:** The economists propound short-run as well as long-run economic models or long-run investment models in which the national income data are very widely used.

5. **Research:** The national income data are also made use of by the research scholars of economics. They make use of the various data of the country's input, output, income, saving, consumption, investment, employment, etc., which are obtained from social accounts.

6. **Per Capita Income:** National income data are significant for a country's per capita income which reflects the economic welfare of the country. We can understand that the higher the per capita income, the higher the economic welfare of the country.

7. **Distribution of Income:** National income statistics enable us to know about the distribution of income in the country. From the data pertaining to wages, rent, interest and profits, we learn of the disparities in the incomes of different sections of the society. Similarly, the regional distribution of income is revealed. It is only on the basis of these that the government can adopt measures to remove the inequalities in income distribution and to restore regional equilibrium. With a view to removing these personal and regional disparities, the decisions to levy more taxes and increase public expenditure also rest on national income statistics.

1.12 Difficulties in Estimation of the National Income

There are many difficulties in measuring national income of a country accurately. The difficulties involved are both conceptual and statistical in nature. Some of these difficulties or problems involved in the measurement of national income are enumerated below.

1. **Non-Monetary Transactions:** In measuring national income from the output side only those items which are purchased and sold through the market are included. However, all direct sales of various goods and services are excluded. In other words, GDP includes the money value of those items which are sold through the market at current prices. In developing countries like India a major portion of output is not sold through the market. Many useful services are produced by members of households for the benefit of themselves or their families. The value of these services is not included in GDP because they do not represent services purchased through market transactions.

2. **The Value of Leisure:** All of us place some value on our time. We sell some of our time to employers for labour income; however, we retain much of it for our own use of leisure. Some of this leisure is used to render household services that escape inclusion in GDP. The satisfaction we get from recreational activities and other uses of our leisure time is also not included in GDP.

3. **Cost of Environmental Damage:** The people of a country may be able to enjoy more and better goods and services each year, but they must also put up with more congestion, dirty air, polluted water and other environmental costs that decrease the quality of their lives. Costs are associated with pollution and other aspects of industrial activity that damage the environment. The costs of environmental damage are not subtracted from the market value of final products when GDP is calculated.

4. **The parallel economy:** India has a vast underground economy. This economy consists of transactions that are never reported to tax and other government authorities. It includes transactions involving illegal goods and services, such as trading in harmful drugs, gambling, smuggling and prostitution. These illegal goods and services are final products that are not included in GDP. The underground (unofficial) economy is also called parallel economy.

5. **Self-Consumption:** A special problem arises in agriculture which is the most dominant sector in less developed countries (LDCs) like India. Subsistence farmers who produce food for themselves and their family members consume a major portion of their own output every year. Since this portion is not sold through the market, it is excluded from GDP. The reason is that it is difficult to measure the market value of this output. A lot of arbitrariness is involved in the process of measuring it.

6. **Lack of Official Records:** Another problem arises due to lack of reliable data. The reason is that many people in LDCs like India sell their output through the market no doubt but they do not maintain any official accounts of their transactions.

Short Type Questions :

1. Scope of Macroeconomics
2. The Circular Flow of Income
3. Personal Income
4. Gross Domestic Product
5. Net National Product at Factor Cost

Essay Type Questions :

1. Explain the Circular Flow of Income in a two sector economy?
2. Explain the Circular Flow of Income in a Four sector economy
3. Analyse the concepts of national income
4. Explain the components of National Income?
5. Briefly Review the Different Methods of Estimating National Income?
6. Examine the Importance of the National income estimations?
7. Examine the Role of Big Data in estimating National Income?

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Module

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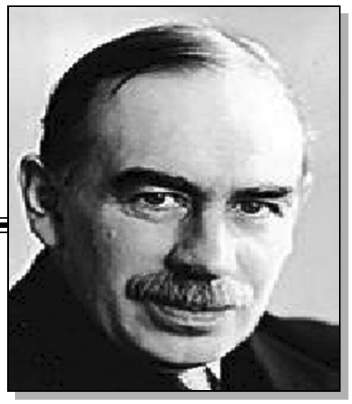

J.M. KEYNES

5th June 1883 - 21st April 1946

Theories of Income and Employment

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2.1 Concepts of ADP & ASP

In the Keynesian theory of income and employment determination, the principle of effective demand occupies a significant place. Keynes has used two key terms, namely, aggregate demand price and aggregate supply price, for determining effective demand. Aggregate demand price and aggregate supply price together contribute to determine effective demand, which further helps in estimating the level of employment of an economy at a particular period of time.

In an economy, the employment level depends on the number of workers that are employed, so that maximum profit can be drawn. Therefore, the employment level of an economy is dependent on the decisions of organizations related to hiring of employees and placing them. The level of employment can be determined with the help of aggregate supply price and aggregate demand price. Let us study these two concepts in detail.

Workers Lakhs	Aggregate Demand Price	Aggregate Supply Price
5	50	30
10	70	50
15	100	80
20	140	120
25	180	170
30	210	210
35	230	280

Table 2.1

Aggregate Demand Price: Aggregate demand price is the total amount of money that an organization expects to receive from the sale of output produced by a specific number of workers. In other words, the aggregate demand price signifies the expected sale receipts received by the organization by employing a specific number of workers. Aggregate demand price schedule refers to the schedule of expected earnings by selling the product at different levels of employment. The higher the level of employment, the greater the level of output would be. Consequently, increase in the employment level would increase the aggregate demand price. Thus, the slope of aggregate demand curve would be upward to the right.

For example, we assume that entrepreneurs earn 50 crores of income by selling a certain quantity of goods in the market by employing a fixed number of 5 lakh workers in the economy, then this revenue is called aggregate demand price. Aggregate demand prices are listed in Table 2.1. Aggregate demand prices are different at different employment levels in the table. As employment size increases in the economy, aggregate

demand prices also increase. But they are increasing at a decreasing rate.

Aggregate Supply Price: Aggregate supply price refers to the total amount of money that all organizations in an economy should receive from the sale of output produced by employing a specific number of workers. In simpler words, aggregate supply price is the cost of production of products and services at a particular level of employment. It is the total amount of money paid by organizations to the different factors of production involved in the production of output. Therefore, organizations would employ the factors of production until they can recover the cost of production incurred for employing them. A certain minimum amount of price is required for inducing employers to offer a specific amount of employment.

If an organization does not get an adequate price so that cost of production is covered, then it employs fewer workers. Therefore the aggregate supply price varies according to different numbers of workers employed. Aggregate supply price schedule is a schedule of minimum price required to induce the different quantities of employment.

For example, if the economy expects to employ a certain number of 5 lakh workers and produce a certain quantity of goods, the revenue expected by the movement is at least 30 crores. The minimum aggregate supply prices required to employ more and more workers and produce goods at different levels are shown in Table 2.1. Thus, the higher the price required to induce the different quantities of employment, the greater the level of employment would be.

2.2 Keynesian Theory of Income & Employment - Effective Demand

The principle of 'effective demand' is basic to Keynes' analysis of income, output and employment. Economic theory has been radically changed with the introduction of this principle. Stated briefly, the Principle of Effective Demand tells us that in the short period, an economy's aggregate income and employment are determined by the level of aggregate demand which is equal to aggregate supply. The principle of effective demand occupies an integral position in the Keynesian theory of employment. The General theory has the basic observation that total demand determines total employment. A deficiency of effective demand causes unemployment.

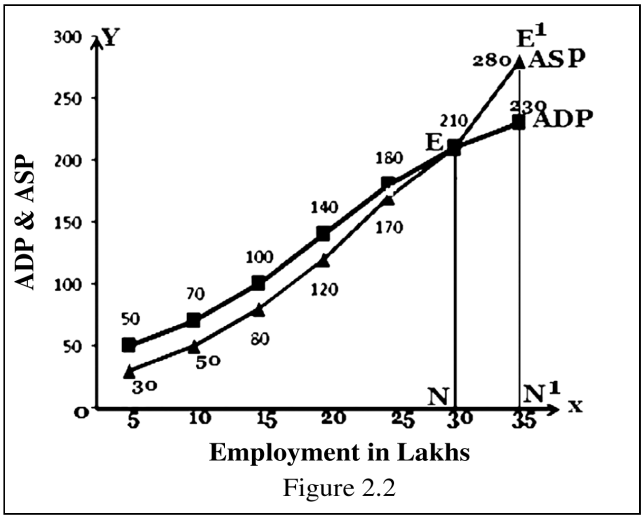


Figure 2.2

Determination of the Level of Employment - Effective Demand: In Fig. 2.2, ADP is the Aggregate Demand Price and ASP the Aggregate Supply Price. The point E where the ADP curve is cut by the ASP is called the point of effective demand. It may be noted that there are so many points on the aggregate demand curve ADP, but all these points are not effective except point E. In the diagram, aggregate supply price shows the minimum proceeds which are just necessary to induce entrepreneurs to provide varying amounts of employment; the aggregate demand price shows the proceeds expected from the sale of outputs resulting from various amounts of employment.

Before these curves intersect each other at E, ASP lies below the ADP so that at the level of employment the expected sale proceeds are greater than the minimum sale proceeds necessary, showing that the employers will be induced to provide increased amount of employment. At point E, ADP is intersected by ASP and entrepreneurs' expectations of proceeds are realised.

It may, however, be noted that the economy is no doubt, in equilibrium at the point E, for here the entrepreneurs do not have the tendency either to increase or decrease employment. But Keynes makes a singular contribution to economic analysis by saying that E may or may not be a point of full employment equilibrium. If, however, some workers

still remain unemployed when ADP and ASP are equalised, in that case, it will be known as Underemployment Equilibrium. Aggregate demand and aggregate supply might be equal at full employment; this will be so if investment happens to equal the gap between the aggregate supply price corresponding to full employment and the amount which consumers choose to spend on consumption out of full employment income.

Keynes believed that private investment in a capitalist economy is never sufficient to fill such a gap. To achieve full employment from N to N1 (30 Lakhs to 35 Lakhs), Keynes suggested that in the short period government can raise aggregate demand in the economy through public investment which is not profit-motivated.

2.3 Important Concepts and Principles of Behavioural Macroeconomics

Behavioral macroeconomics is a field that integrates insights from psychology, sociology, and other behavioral sciences into the study of large-scale economic phenomena like inflation, unemployment, and economic growth. Unlike traditional macroeconomics, which assumes that people are perfectly rational and always make decisions to maximize their self-interest, behavioral macroeconomics acknowledges that human behavior is often influenced by cognitive biases, emotions, and social factors. Behavioral macroeconomics builds on the principles of behavioral economics, applying them to the aggregate economy. Some of its core principles include:

1. Bounded Rationality: This concept, pioneered by Herbert Simon, suggests that people have limited cognitive abilities, information, and time, which prevents them from always making perfectly rational, optimal decisions. Instead, they use simple mental shortcuts, known as heuristics that can sometimes lead to predictable errors or biases.

2. Loss Aversion: This is the idea that the pain of losing something is psychologically more powerful than the pleasure of gaining something of equal value. This can explain why people are reluctant to sell assets at a loss or why consumers may react more strongly to price increases than they do to discounts.

3. Present Bias: People tend to overvalue immediate rewards and undervalue future ones. This can explain why people have trouble saving for retirement, even when they know it's in their long-term best interest.

4. Social Norms and Herding: People are heavily influenced by the behavior and expectations of others. This "herding" behavior can lead to phenomena like asset bubbles or market crashes, where collective irrationality amplifies individual decisions.

Behavioral Macroeconomics vs. Traditional Macroeconomics

Traditional macroeconomic models, such as the New Classical and New Keynesian models, are based on the assumption of rational expectations, where individuals use all available information to make optimal decisions. In these models, markets are expected to quickly return to equilibrium, and policy interventions are often seen as ineffective if they are fully anticipated.

In contrast, behavioral macroeconomic models relax the assumption of perfect rationality. They incorporate concepts like bounded rationality and heuristics to show how a deviation from rational behavior can lead to persistent macroeconomic phenomena that traditional models struggle to explain. For example, these models can better account for:

1. **Macroeconomic Volatility:** The emotional swings between "animal spirits" (optimism) and pessimism can lead to boom-bust cycles that are more extreme and persistent than those predicted by traditional models.
2. **Sticky Wages and Prices:** Behavioral models can explain why wages and prices don't always adjust quickly to changes in economic conditions. For instance, workers may resist nominal wage cuts due to loss aversion, contributing to unemployment.
3. **Financial Crises:** The herding behavior of investors and the overconfidence of financial agents can create asset bubbles that, when they burst, lead to severe economic contractions.

Behavioral macroeconomic principles are being applied to various areas of economic policy and analysis:

1. **Monetary Policy:** Central banks are beginning to use behavioral insights to understand how people form expectations about inflation and how their policies might be perceived. For instance, a central bank might try to "nudge" inflation expectations by being very explicit and public about its inflation targets.
2. **Fiscal Policy:** Policymakers can design fiscal policies that account for behavioral biases. For example, automatic enrollment in retirement savings plans leverages the status quo bias to increase saving rates, and "sin taxes" on goods like cigarettes and alcoholic drinks can be effective due to loss aversion.
3. **Consumer Confidence and Business Sentiment:** Behavioral macroeconomics emphasizes that these non-rational factors, which are often ignored in traditional models, can have a significant impact on aggregate demand and economic growth.

In essence, behavioral macroeconomics offers a more realistic and psychologically grounded view of how the economy works by moving beyond the idealized "homo economicus" and embracing the complexities of human decision-making.

2.4 Impact of Automation on Consumption and Employment

Automation significantly impacts employment by displacing some workers, particularly those in routine or low-skilled jobs, while creating new ones that often require different, higher-level skills. This shift can lead to structural unemployment and income inequality, which in turn affects the consumption function.

Impact on Employment

1. **Job Displacement:** Automation, especially in manufacturing and service industries, can directly replace human labor. For example, robots on an assembly line or self-checkout kiosks at a grocery store reduce the need for workers. This leads to job losses for those whose tasks are easily automated.
2. **Skill-Biased Change:** The jobs that are created often require skills in technology, programming, and data analysis to manage and maintain the new automated systems. This creates a skills gap, where displaced workers may not have the necessary training to fill the new positions. As a result, employment for high-skilled workers may increase, while employment for low-skilled workers decreases.
3. **Income Inequality:** This dynamic contributes to a widening gap between the wages of high-skilled and low-skilled workers. High-skilled workers, who are complements to automation, see their productivity and wages rise. Conversely, low-skilled workers, who are substitutes for automation, face stagnant or declining wages, or even job loss.

Impact on the Consumption Function

The consumption function, which shows the relationship between consumer spending and disposable income, is directly affected by these changes in employment and income distribution. The standard Keynesian consumption function is expressed as $C = a+bYd$, where C is consumption, a is autonomous consumption, b is the marginal propensity to consume (MPC), and Yd is disposable income.

1. Shift in Income Distribution: As automation increases income inequality, the overall consumption function of the economy can be impacted. Since high-income earners generally have a lower marginal propensity to consume (MPC) than low-income earners, a redistribution of income from the poor to the rich may lead to a decrease in aggregate consumption. This happens because the wealthy save a larger portion of each additional rupee they earn, while the poor spend a larger portion. This can be visualized as a flattening of the aggregate consumption function curve.

2. Uncertainty and Savings: Job insecurity and the fear of automation can increase precautionary savings among the workforce, even among those not yet directly affected. Facing an uncertain future, individuals may choose to save more and consume less, which would cause a downward shift in the consumption function.

3. Creation of New Goods and Services: Automation can also lead to increased productivity and the creation of new products and services. This can generate new demand and new types of jobs, potentially offsetting some of the negative effects. As new industries and roles emerge, disposable income can rise for some segments of the population, which would increase their consumption. However, the benefits are often not distributed evenly across the economy. In summary, while automation can boost overall productivity and create new high-skilled jobs, its impact on employment often results in greater income inequality. This inequality, in turn, can dampen aggregate consumption by shifting income toward individuals with a lower propensity to consume and by increasing economic uncertainty, posing a potential challenge to macroeconomic stability.

2.5 Keynesian Consumption Function

The relationship between income and consumption is called consumption function. Keynes says that many factors affect the consumption function, which is a major component of aggregate demand. The consumption function states that aggregate real consumption expenditure of an economy is a function of real national income. This is called the Keynesian Consumption Function. The classical economists used to argue that consumption was a function of the rate of interest such that as the rate of interest increased the consumption expenditure decreased and vice versa. Keynes stated that the rate of interest may have some influence on consumption but the real income was the important determinant of consumption.

The aggregate consumption function states that real consumption is a function of real income and then the consumption function can be written as $C = f(Y)$ where C is real consumption expenditure and Y is real national income. This is the Keynesian Consumption Function. The straight line consumption function has a constant slope at all points. The marginal propensity to consume (MPC) remains constant, while the APC falls.

As people's Disposable incomes increase, the consumption expenditure also increases. The increase in consumption expenditure (ΔC), however, is less than the increase in income (ΔY). For example, an increase of Rs.1000 in disposable income leads to an increase in consumption expenditure less than Rs.1000. This is the fundamental psychological law of Keynes. Keynes states in his General Theory, based on psychological knowledge, it is generally believed that people increase their consumption whenever their incomes increase, but they can undoubtedly rely on the Fundamental Psychological Law, which states that an increase in consumption is less than an increase in income. According to Keynes the consumption function must possess the following characteristics:

Aggregate real consumption expenditure is a stable function of real income. The marginal propensity to consume (MPC) or the slope of the consumption function defined as $\Delta C/\Delta Y$ must lie between zero and one i.e. MPC $>0,< 1$. The average propensity to consume (APC) or the proportion of income spent on consumption defined as C/Y should be decreasing as income increases. From the relation between marginal and average we know that, when average falls, marginal is below average. Thus, when the average propensity to consume (APC) falls, the marginal propensity to consume (MPC) must be lower than the APC. The marginal propensity to consume (MPC) itself probably decreases or remains constant as income increases. In view of the above summary, we can conclude that, if the current levels of income

increase, the consumption expenditure will also increase, but the rate of increase in consumption expenditure will be lower than the increase in income. This reduces both the Average Propensity to Consume and the Marginal Propensity to Consume. Marginal Propensity to Consume, however, is less than Average Propensity to Consume. For this reason there is no proportional relationship between income and consumption expenditure.

2.6 APC & MPC- Graph Illustrations

Average Propensity to Consume: Average propensity to Consume is the ratio between total consumption and total disposable income. The average propensity to consume measures how much of the total income is consumed at a given level of income. In the table 2.3 consumption expenditure is illustrated at different levels of income.

$$\text{Average Propensity to Consume} = (APC) = \frac{\text{Present Total Consumption}}{\text{Present Total Disposable Income}} \quad (C / Y)$$

Marginal Propensity to Consume: The marginal consumption ratio is the ratio between the change in total consumption expenditure and the change in disposable income.

$$\text{Marginal Propensity to Consume (MPC)} = \frac{\text{Change in Consumption}}{\text{Change in Disposable Income}} \quad (\Delta C/\Delta Y)$$

These four characteristics (C,Y, C/Y, $\Delta C/\Delta Y$) specify the shape of the consumption function. It can be seen clearly that, if we draw a straight line consumption function with a positive intercept with the vertical axis, and intersecting the 45^0 line from above, it will satisfy all the four characteristics. In Fig. 2.4 we draw Y on the horizontal axis and C on the vertical axis.

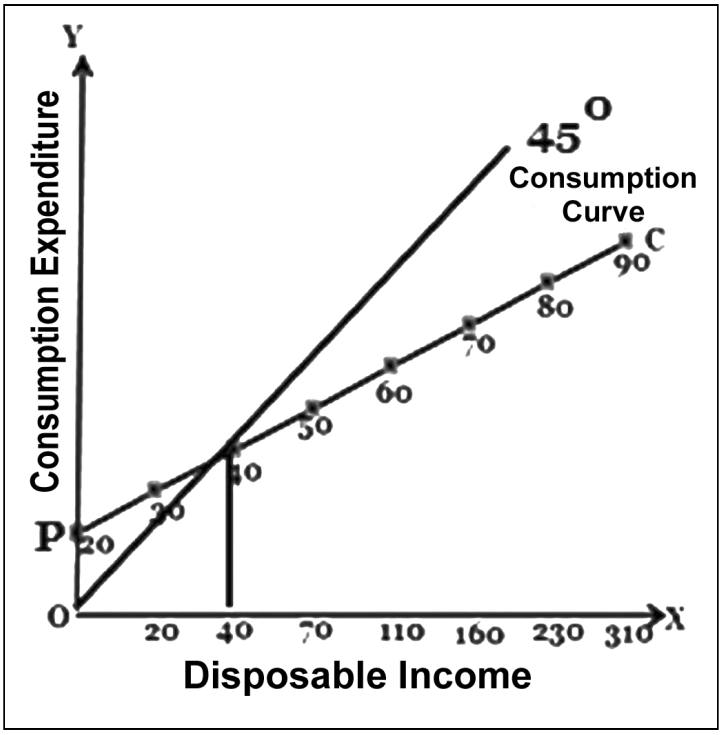
Table 2.3

Disposable Income Crores	Consuption expenditure Crores	APC	MPC
Y	C	C/Y	$\Delta C/\Delta Y$
0	20	∞	
20	30	1.50	0.50
40	40	1.00	0.50
70	50	0.71	0.33
110	60	0.55	0.25
160	70	0.44	0.20
230	80	0.35	0.14
310	90	0.29	0.12

In table 2.3 we described the relationship between disposable income, consumption expenditure, average consumption and marginal consumption behaviors. Considering the relationship between disposable income and consumption expenditure, we find that, as the level of disposable income increases consumption expenditure is also increasing steadily. But the increase in consumption expenditure is less than the increase in disposable income. Connecting the points of consumption expenditures at different income levels we will get a consumption curve, shown in figure 2.4.

In the table 2.3, when the disposable income levels were increasing, average propensity to consume decreased from infinity to 0.29. In the beginning consumption expenditure is 20 crores, even though the level of disposable income is zero. This is known as autonomous consumption. While the disposable income increases to 40 crores, consumption expenditure also increased to 40 crores. Here the average propensity to consume is equal to one. As the disposable income levels increase, the proportion allocated to consumer expenditure is steadily decreasing.

According to Keynes's analysis, the marginal propensity to consume trend is lower than the average propensity to consume trend. As the income levels increase, average propensity to consume and marginal propensity to consume tend to decrease. Therefore, Keynes notes that there is a disproportionate relationship between disposable income and consumption expenditure, in the short term. In the table 2.3, consumer expenditure is higher than disposable income when income is less than Rs 40 crore. However, there is a question, how much people can afford to spend beyond income. The answer is that people use savings in the form of bonds in the past. If the country's imports exceed exports, the consumption expenditure may exceed the income. Similarly, the use of inventories may exceed consumption expenditure over the income. A straight line function, $C = \alpha + \beta Y$, is used to estimate the relationship between disposable income and consumption in the short term.



C = Consumption expenditure

α = Autonomous consumption

β = Marginal propensity to consume

2.7 Factors Determining Consumption Function

The relationship between income and consumption is called consumption function. Keynes says that many factors affect the consumption function, which is a major component of aggregate demand. The consumption function states that aggregate real consumption expenditure of an economy is a function of real national income. This is called the Keynesian Consumption Function. Changes that take place in consumption expenditure due to changes in income are measured by marginal propensity to consume. However, a shift in consumption function results in a change in consumption expenditure. Keynes considers consumption function is stable and associated with changes in income leads to changes in consumption. According to Keynes, consumption increases as income increases. Similarly, if income is reduced, the consumption expenditure is also reduced.

According to Keynes, aggregate real consumption expenditure depends on aggregate real national income, other things remaining constant. The factors other than the level of income that affect consumption can be divided into Subjective factors and objective factors. Subjective factors are psychological ones that cannot be quantitatively measured. Objective factors are considered to be economic variables that can be measured quantitatively. Structural factors include aspects particularly relevant for the problem of aggregation. Let us first consider the subjective or psychological factors affecting consumption.

I. Subjective factors: The subjective factors consist of basic values, states of mind, attitudes, etc., which cannot be measured in quantitative terms. In his General Theory Keynes mentioned 8 subjective factors that promote savings. They are 1) Precaution, 2) Foresight, 3) Future calculation, 4) Growth (improvement) 5) Independence 6) Enterprise 7) Pride, 8) Greed (avarice).

Apart from these he mentioned the motives for consumption, such as, "enjoyment, short-sightedness, generosity, miscalculation, ostentation and extravagance." He called them subjective factors that are unlikely to change significantly in the short-run. Psychological factors, such as, expectations and attitudes do influence consumption. Rational behaviour suggests that a consumer who expects an increase in income or in price level would consume more than one who expects no such changes. Keynes accepted this logic but felt that expectations can be ignored because different people in an economy will have different expectations, and such expectations will probably cancel out each other in the aggregate analysis.

II. Objective factors: Factors which are influenced by changes in the consumption behavior as a result of changes in the economy are called objective factors. These changes may cause the consumption function to move up or down. The objective factors are mentioned below.

1. **Interest rate:** The first objective factor after income is the interest rate. A rise in the interest rate may affect aggregate consumption expenditure in various ways. For example, a rise in the rate of interest will reduce bond prices, thereby discouraging the consumption propensities of the bondholders. It may also have the effect of substituting one type of asset for another. Classical economists used to believe that, consumption or saving was primarily a function of the rate of interest. However, Keynes did not consider the interest rate to be an important factor in influencing consumption or saving.

2. **Volume of wealth:** The second factor influencing consumption expenditure is the volume of wealth. The argument is that, everything being equal, the more savings a man has, the less would be his desire to accumulate more. If a person has already a great volume of wealth his propensity to consume will be high. The greater the volume of wealth in the economy the greater will be the consumption expenditure. This is known as the Pigou effect.

3. **Consumer credit:** The third factor affecting consumption expenditure is the terms of consumer credit which have been considered to have significant effect on purchases of consumer durables. The less restricted the terms of credit, the greater will be the demand for consumer durables. However, the impact of consumer credit on the volume of consumption expenditure is difficult to measure.

4. **Sales effort:** The sales effort of the producers would affect consumption expenditure. The sales effort through advertisement has a significant effect on the consumption expenditure. Other things remaining the same, the greater the volume of advertising expenditure, the greater will be the consumption expenditure.

5. **Income distribution:** Another important objective factor is income distribution. We know that the marginal propensity to consume of low income people is substantially higher than the marginal propensity to consume of high income people. Hence, when there is redistribution of income from rich income groups to poor income groups, this will increase consumption expenditure in an economy even if the level of income remains unchanged. This is because the loss of consumption of the rich people will be over-compensated by the gain of consumption of the poor since the marginal propensity of the poor is higher than the rich. Since the distribution of income changes slowly, it is unlikely to have a short- run impact on the economy at all.

6. **Demographic factors:** Other things remaining the same, spending of big families must be greater than that of smaller families. Rural families spend less than urban families. Families with young children are likely to spend more than those without small children. These demographic factors are unlikely to change in the short-run and hence can be ignored in the short-run analysis.

7. **Fiscal policy:** The fiscal policy can also influence the aggregate consumption expenditure. If the government raises more money through taxation, it will reduce the disposable income and hence the consumption expenditure will fall. Similarly, if the government reduces taxes or makes more transfer payments, the disposable income will increase and hence the consumption expenditure will also increase.

8. **Windfall Gains or Losses:** Windfall gains or losses also affect consumption behavior. Unexpected profits, such as winning a lottery and the hike in stocks and real estate prices in favor of the economy, increase propensity to consume. In the event that the economic conditions are not favorable, the share price of the stock and the real estate prices are reduced and the consumption trend is reduced. We can conclude by saying that, there are many subjective and objective factors which may influence consumption expenditure, but most of these factors remain unchanged in the short-run, and hence the short-run aggregate consumption expenditure may be regarded as a function of income.

2.8. Savings Function

Saving is that part of income which is not spent on current consumption. The relationship between saving and income is called saving function. Simply put, saving function or propensity to save relates the level of saving to the level of income. It is the desire or tendency of the households to save at a given level of income. Thus, saving (S) is a function (f) of income (Y).

Symbolically: $S = f(Y)$

Two noteworthy features of saving function are:

1. Saving can be negative (-) at zero or low level of income.
2. As Income increases, savings also increase. Saving is residual income of households that is left after consumption.

Algebraically : $S = Y - C$

As the incomes of people increase, similarly their consumption expenditure also increases, but increase in consumption expenditure (ΔC), however, is less than the increase in income (ΔY). For this reason, the proportionate change in the consumption expenditure gradually decreases and the savings component increases. Based on fundamental psychological law, people generally increase their consumption as their income increases, but the savings component increases gradually as consumption expenditure decreases.

2.9. APS & MPS Illustration

Average Propensity to Save: The average propensity to save is the ratio between total savings and total disposable income. Average propensity to save shows the proportion of total income saved (S/Y) at different income (Y) levels. Average propensity to save is explained in table 2.5. S/Y represents the average propensity to save.

$$\text{Average Propensity to Save} = (APS) = \frac{\text{Present Total Savings}}{\text{Present Total Disposable Income}} = \frac{S}{Y}$$

Marginal Propensity to save: The marginal propensity to save is the ratio of change in savings (ΔS) to the change in disposable income (ΔY). This means that the proportionate savings from the increased income will be added. This is illustrated in Table 2.5.

$$\text{Marginal Propensity to save (MPS)} = \frac{\text{Change in Savings}}{\text{Change in Disposable Income}} = \frac{\Delta S}{\Delta Y}$$

Table 2.5 presents the variables like disposable income, consumption expenditure, savings, average propensity to consume, marginal propensity to consume, average propensity to save and marginal propensity to save etc. The relationship among the variables is explained in detail in the table 2.5. In the table, when the income level is zero, the consumption level is 20 crore. This is known as autonomous consumption. At this point, expenditure is more than disposable income. While the disposable income increases to 40 crores, consumption expenditure also increased to 40 crores. Here the average propensity to consume is equal to one. As the disposable income levels increase, the proportion allocated to consumer expenditure steadily increases at a decreasing rate.

As the income levels increase, average propensity to consume and marginal propensity to consume tend to decrease. Therefore, Keynes notes that there is a disproportionate relationship between disposable income and consumption expenditure. In the table 2.5 consumer expenditure is higher than disposable income when income is less than Rs 40 crore. However, there is a question, how much people can afford to spend beyond their income. The answer is that people use savings in the form of bonds in the past. If the country's imports exceed exports, the consumption expenditure may exceed the income. Similarly, the use of inventories may exceed consumption expenditure over the income. When disposable income increases to 40 crores, the consumption expenditure is also 40 crores. At this level of income the savings are zero. As the income levels increase, the proportion allocated to consumer spending is steadily decreasing, while savings are increasing.

Disposable Income	Consumption Expenditure	Savings	Average Propensity Consume APC	Marginal Propensity Consume MPC	Average Propensity Save APS	Marginal Propensity Save MPS
Y	C	S	C/Y	ΔC/ΔY	S/Y	ΔS/ΔY
0	20	-20	∞			
20	30	-10	1.50	0.50	-0.50	0.50
40	40	0	1.00	0.50	0.00	0.50
70	50	20	0.71	0.33	0.29	0.67
110	60	50	0.55	0.25	0.45	0.75
160	70	90	0.44	0.20	0.56	0.80
230	80	150	0.35	0.15	0.65	0.85
310	90	220	0.29	0.13	0.71	0.87

Table 2.5

When we observe the relationship between average propensity to consume and average propensity to save in the table, we find that, the sum of APC and APS is equal to one (1) at any given income level. Likewise when we observe the relationship between marginal propensity to consume and marginal propensity to save in the table, we can find, the sum of MPC and MPS is equal to one (1) at any given income level. For example, at income Rs 20 crore, the average propensity to consume (APC) is 1.50 and the average propensity to save (APS) is -0.50, and income at 70 crores the average propensity to consume (APC) is 0.71 and the average propensity to save (APS) is 0.29 equal to one.

1.Average propensity to consume (APC) + Average propensity to save (APS) = 1

$\therefore$ APC + APS = 1

$\therefore$ APS = 1-APC

$\therefore$ APC = 1-APS.

For example, at income 70 crores, the marginal propensity to consume (MPC) is 0.33, the marginal propensity to save (MPS) is 0.67; at income 110 crores, the marginal propensity to consume (MPC) is 0.25 while the marginal propensity to save (MPS) is 0.75 equal to one.

2. Marginal propensity to consume + Marginal propensity to save = 1

$\therefore$ MPC + MPS = 1

$\therefore$ MPS = 1-MPC

$\therefore$ MPC = 1-MPS

Short Type Questions :

1. Effective Demand
2. Consumption Function
3. Saving Function

Essay Type Questions :

1. Explain Keynesian Employment Theory
2. What are the factors that determine the consumption function
3. What is the saving function? Explain the concepts of APS & MPS
4. Explain Important concepts and principles of Behavioural Macroeconomics
5. Describe Impact of Automation on Consumption and Employment

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Module

3



KNUT WICKSELL

20th Dec 1851 - 3rd May 1926

Investment (Interest)

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3.1 Types of Investment

Investment plays an important role in economic development. The level of economic activities depends upon the level of investment. Higher the level of investment, higher will be the economic activities. Lower the level of investment, lower will be the economic activities.

Increase in the production of capital goods in a specific period of time is called investment. New addition to the stock of capital such as plants, machines, trucks, factory buildings, equipment, tools, etc. is known as the investment. This type of investment leads to increase in level of aggregate demand and level of income and employment.

Investment can be classified into many kinds. The following are the important types of investment.

1. Gross investment: Gross investment is the total amount spent on new capital assets during the specific period of time. This can be denoted as Ig .

2. Net investment: Net investment refers to the net addition to the existing capital stock. This can be denoted as In. We can get net investment by subtracting the depreciation of the capital from the gross investment. This can be shown by an equation as given below.

$I_n = I_g - D$

I_n = Net investment

I_g = Gross investment

D = Depreciation

3. Government/Public investment: Investment made by the Central, State and Local governments is called public or government investment. The main motive of the government investment is welfare of the people. Ex: construction of roads and defence investment etc.

4. Private Investment: Investment made by the individuals, private firms or nongovernmental organizations is called private investment. The main motive of the private investment is to earn the profits. This type of investment depends upon the MEC (expected rate of profit) and rate of interest.

5. Financial Investment: Buying of existing bonds, shares, equities and securities by an individual is called financial investment. This type of investment does not affect the aggregate demand and level of income and employment in the economy.

6. Real Investment: Production of new capital assets like new plants, machines, construction of new factory buildings, construction of roads, railways, educational institutions by the government for the welfare of the society is known as real investment. This type of investment leads to increase in level of income and employment.

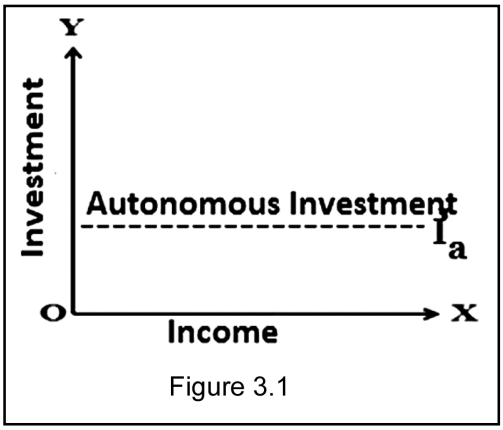

Figure 3.1

7. Autonomous Investment: The investment which does not depend upon the changes in the level of income and rate of interest is known as autonomous investment. Most of the investment undertaken by the government is the autonomous investment. Autonomous investment can be denoted by I_a.

The autonomous investment is income/rate of interest inelastic. Autonomous investment is not affected by the changes in income or rate of interest. Hence the autonomous investment curve is perfectly inelastic, i.e., parallel to the OX (horizontal) axis, shown in the figure 3.1.

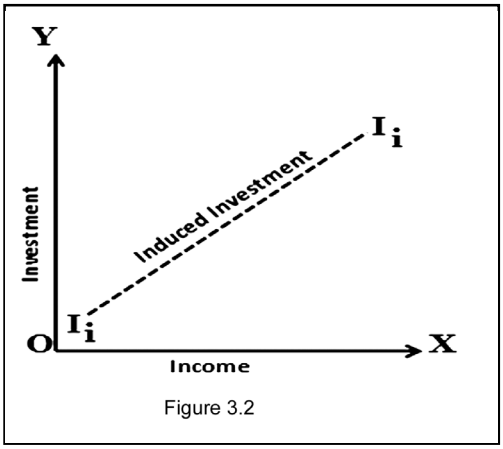

Figure 3.2

8. Induced Investment: The investment which is motivated by the income or rate of profit is called as induced investment. Induced investment will change due to changes in the income/profit/rate of interest. All the investments in private sector are induced investments. Because the private investors invest on the basis of profit or income only. Induced investment can be denoted by Ii. Induced investment is income elastic. Induced investment is a function of income. Ii = f (Y), Ii = induced investment; Y = income There is direct relationship between income and induced investment. Induced investment increases with the rise in income. Induced investment decreases with the fall in income. Hence induced investment line slopes upward from left to right (positive slope), shown in the figure 3.2.

9. Ex-Ante Investment: Ex-Ante means planned. Ex-Ante investment refers to the amount of investment which firms plan to invest at different levels of income in the economy. It is also called intended investment, planned investment, voluntary investment and desired investment.

10. Ex-Post Investment: Ex-Post means actual or realised. Ex-Post investment refers to the realised or actual investment in an economy during a year. This is also called actual investment, unplanned investment and unintended investment.

3.2 Determinants of Investment

The level of investment mainly depends upon the MEC and rate of interest. There are several other factors, which affect the investment. The following are the important determinants of investment.

1. **Rate of Interest:** This is the most important determinant of investment. The level of investment is inversely related with the rate of interest. Other things remaining constant, higher the rate of interest lower will be the level of investment. Lower the rate of interest higher will be the level of investment.
2. **Marginal Efficiency of Capital (MEC):** According to Keynes the expected rate of profit from a new capital asset is called MEC. MEC is another important determinant of level of investment. Investors compare the rate of interest and rate of profit that they expected, i. e MEC. If MEC is greater than the rate of interest investors are induced to invest more. If MEC is lower than the rate of interest investors are induced to invest less.
3. **Inventions and Innovations:** Advances of technology and introduction of new products and processes also affect the level of investment. Advanced technology and innovations tend to raise the inducement to invest. The absence of innovations and inventions tend to low inducement to invest.
4. **Availability of Credit:** Availability of credit facilities tends to raise the investment in the economy. Non availability of credit facilities will discourage the investment.
5. **Business Expectations:** Business expectations are very uncertain. Expectations may change quickly and drastically in response to the general mood of the business community, rumours, political climate etc. Optimistic expectations tend to increase investment. Pessimistic thinking of business community, tends to decrease investment.
6. **Liquid Assets:** Possession of liquid assets by the investors also affect the level of investment. If the investors possess large liquid assets the inducement to invest is high. If the investors possess few liquid assets the inducement to invest is low.
7. **Growth of Population:** Growth of population leads to a growing market for all types of goods produced in the economy. To meet the demand of an increasing population, investment will increase. On the other hand a decline in population results in lowering the inducement to invest.
8. **Expected Demand for Products:** The expected demand for products also affects the level of investment. If the expected demand for products is high, inducement to investment also will be high. If the expected demand for products is low, inducement to investment also will be low.
9. **State Policy:** The economic policy of the government also influences the level of investment. If the state imposes high taxes on corporations, the inducement to invest will be low. If the government encourages the firms by providing low interest rate credit, infrastructure facilities and subsidies etc., firms tend to invest more.
10. **Political Climate:** If there is political instability in the country or war with other countries, the inducement to invest will be low. On the other hand political stability and peaceful atmosphere in the country tend to raise the inducement to invest.

3.3 Marginal Efficiency of Capital (MEC)

According to Keynes, the level of income and employment in the economy depends on the level of effective demand. The effective demand is determined by two factors - Aggregate Supply Price (ASP) and Aggregate Demand Price (ADP). The aggregate demand price itself depends on two factors: Consumption expenditure (C) and investment expenditure (I). In the short run the consumption expenditure remains constant. Therefore, in the short run aggregate demand price depends on investment expenditure only. Meanwhile Investment expenditure depends on two factors: interest rate and marginal efficiency of capital. In the short run, the interest rate remains constant.

Therefore, investment is determined by marginal efficiency of capital. As marginal efficiency of capital increases, the level of investment increases. When the level of investment increases, the aggregate demand and effective demand increase; as a consequence the income and employment levels also increase. Keynes opined that marginal efficiency of capital plays an important role in determining income and employment levels in the economy.

Definition - Marginal Efficiency of Capital: Marginal Efficiency of Capital refers to the expected profitability of a capital asset. It may be defined as the rate of discount which equates the present value of a series of cash flows obtainable from an income-earning asset like a machine over its entire economic life to the cost of the machine. Thus the marginal efficiency of capital is the percentage of profit expected from a given investment on a capital asset. Investment continues as long as the marginal efficiency of capital is greater than the rate of interest. Thus, the level of investment is determined at the point where the marginal efficiency of capital is equal to the market rate of interest. This can be explained by the following formula:

$$Sp = \frac{R_1}{(1+r)} + \frac{R_2}{(1+r)^2} + \frac{R_3}{(1+r)^3} \ldots\ldots \frac{R_n}{(1+r)^n}$$

$R_1, R_2, R_3 \ldots\ldots R_n$ = Expected returns annually over the life of the capital asset

r = discount rate or marginal capital efficiency.

SP = Supply Price of machine.

Example: Suppose the life span of a machine is 2 years

First year expected returns are = Rs 1100

Second year Expected Returns are= Rs 2420

Suppose discount rate (r) is 10%. What is the supply price or current value of the machine?

The supply price of machine is Rs. 3,000

$$SP = \frac{1100}{(1+10\%)} + \frac{2420}{(1+10)^2}$$

$$= \frac{1100}{(1+0.1)} + \frac{2420}{(1+0.1)^2}$$

$$= \frac{1100}{(1.1)} + \frac{2420}{(1.1)^2}$$

$$= \frac{1100}{1.1} + \frac{2420}{1.21}$$

$$= \frac{11000}{11} + \frac{242000}{121}$$

$$= 1000 + 2000 = 3000$$

3.4 Investment demand schedule- MEC curve

According to Keynes, the volume of investment in a community depends mainly on two factors: the marginal efficiency of capital and the rate of interest on long-term loans. Both the factors are highly unstable, the former being more unstable than the latter. The marginal efficiency of capital is the highest rate of return over cost expected from producing one more unit of a particular type of capital asset.

Generally Investors make investments by comparing marginal efficiency of capital with the interest rate. Investment is profitable when marginal efficiency of capital is higher than the interest rate. Investment is not profitable if marginal efficiency of capital is below the interest rate. Equilibrium of investment is determined at the point, where the marginal efficiency of capital is equal to the interest rate.

Marginal Efficiency of Capital > Interest Rate ↑ Investment

Marginal Efficiency of Capital < Interest Rate ↓ Investment

Marginal Efficiency of Capital = interest rate →← equilibrium investment

Invest-ment Crores	Interest Rate %	Marginal Efficiency Capital
10,000	5	7
20,000	5	6
30,000	5	5
40,000	5	4
50,000	5	3

Table 3.3

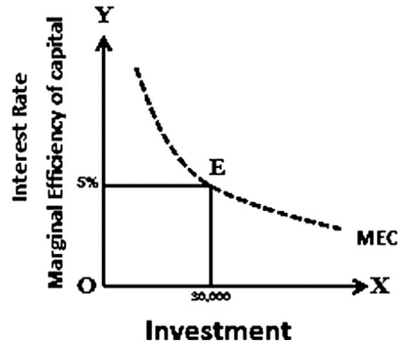

Figure 3.4

Relationship between Investment - Marginal Efficiency of Capital – Interest Rate The marginal efficiency of capital differs at different investment levels. Generally, when the marginal efficiency of capital decreases, the size of the investment increases. If the marginal efficiency of capital increases, the size of the investment decreases. This means, there is an inverse relationship between investment and marginal efficiency of capital. So that, the MEC curve or the investment demand curve has a negative slope. It is sloping downward from left to right.

In Table 3.3 the marginal efficiency of capital (MEC) is decreasing as the investment volume increases. At an investment of Rs 10,000 crore, the interest rate is 5% and the marginal efficiency of capital (MEC) is 7%. So the investment will be raised to Rs 20,000 crore. Here the marginal efficiency of capital (MEC) is more (6%) than the interest rate (5%). The investment will be raised further to Rs 30,000 crore. At investment of Rs 30,000 crore, the marginal efficiency of capital (MEC) is equal to (5%) the interest rate. If the investment is raised more than this (Rs. 40,000), the marginal efficiency of capital (MEC) is 4%, less than the interest rate 5%. Therefore, no investor will invest more than Rs. 30,000 crore. Hence Rs. 30,000 crores of investment is called equilibrium investment. The point where the interest rate and the marginal efficiency of capital intersect each other or are found equal is called investment equilibrium. In Table 3.3 and Figure 3.4 the equilibrium investment point is 'E'

3.5 The Marginal Efficiency of Investment

The Marginal Efficiency of Investment (MEI) is an economic concept representing the expected rate of return on an additional unit of investment within a specified period of time. It is a key determinant in a firm's decision to undertake a new investment project

1. **Investment Decision Rule:** Firms will continue to invest as long as the MEI is greater than or equal to the cost of borrowing (the market rate of interest) plus an appropriate risk premium. If the MEI is higher, the investment is profitable; if it's lower, the firm is better off not investing or saving its funds.
2. **The MEI Schedule (Investment Demand Curve):** This schedule or curve plots the total investment demanded at various interest rates. It is downward-sloping, illustrating the inverse relationship between the interest rate (cost of funds) and the volume of investment. As the interest rate falls, more projects become profitable, and the level of investment increases.
3. **MEI vs. Marginal Efficiency of Capital (MEC):** While often used interchangeably, there is a technical distinction, particularly in Keynesian economics:
   i) MEC is typically defined as the discount rate that equates the present value of the expected stream of future earnings from a specific capital asset to its supply price (cost). It is a stock concept, focusing on the optimal capital stock.
   ii) MEI is a more dynamic and aggregate concept that relates the expected rate of return on the marginal unit of aggregate investment to the rate of investment itself. It is a flow concept, focusing on the net investment in the economy over a given period, taking into account how the supply price of capital goods might rise as investment demand increases.

Factors Influencing MEI

The Marginal Efficiency of Investment is volatile and influenced by a variety of factors, primarily affecting the expected returns from an investment:

1) **Future Expectations/Business Confidence:** Optimism about future economic conditions, demand, and profits leads to a higher MEI and a rightward shift of the MEI curve. Pessimism has the opposite effect.
2) **The Cost of Capital Goods (Supply Price):** If the cost of new machines or factories falls, the profitability of an investment rises, increasing the MEI.
3) **Technological Advancements:** New innovations that enhance the productivity of capital can increase the expected returns from new investments, thus raising the MEI.
4) **Current Level of Demand:** High and growing demand for a firm's output will increase the expected returns from expanding capacity, leading to a higher MEI.
5) **Taxation and Government Policy:** Tax breaks or subsidies for investment can increase the net expected return, boosting the MEI. Conversely, higher corporate taxes would reduce it.
6) **Existing Stock of Capital:** When the existing stock of capital is large, the expected returns from adding new capital (diminishing returns) are likely to be lower, reducing the MEI.

3.6 Green Investment and Sustainable Capital

Green investment and sustainable capital are fundamental concepts in the transition towards a low-carbon, environmentally responsible global economy. They represent a significant shift in how financial resources are allocated, moving from a sole focus on financial returns to a dual mandate that also considers environmental and social impacts.

Green Investment: Green investment refers to the practice of directing financial capital towards projects, companies, and initiatives that have a positive environmental impact. The goal is to support the development and adoption of environmentally friendly technologies and practices. Key sectors for green investment include:

1. **Renewable Energy:** Investing in solar, wind, hydroelectric and geothermal power generation.
2. **Energy Efficiency:** Funding projects that improve energy conservation in buildings, transportation, and industrial processes.
3. **Sustainable Infrastructure:** Financing the construction of green buildings, smart grids, and public transportation systems.
4. **Pollution Prevention:** Investing in waste management, recycling, and clean-up technologies.
5. **Sustainable Agriculture and Forestry:** Supporting practices that minimize environmental harm and promote biodiversity.

Green investment is a subset of sustainable finance, which also includes social and governance factors (ESG). While green investment is narrowly focused on the "E" in ESG, it is a crucial component of a broader, more responsible approach to capital allocation.

Sustainable Capital: Sustainable capital is a broader concept that refers to the total stock of assets-financial, human, natural, and social-that are managed in a way that generates long-term value without compromising the ability of future generations to meet their own needs. It emphasizes that a healthy economy is dependent on healthy ecosystems and a stable society. Sustainable capital aims to:

1. **Preserve and Enhance Natural Capital:** This includes forests, water, clean air, and biodiversity. Green investments are a direct way to build natural capital.

2. **Foster Social and Human Capital:** This involves investments in education, healthcare, and fair labor practices to build a skilled and healthy workforce.
3. **Maintain Financial and Produced Capital:** This is the traditional focus on economic growth, but with a new emphasis on the long-term viability of the investments themselves, not just short-term profits. Sustainable capital is not just about avoiding "dirty" investments; it's about actively generating positive impacts and building a resilient, long-term economic system.

The Impact on the Economy and Environment

The integration of green investment and sustainable capital has a profound impact on both the economy and the environment:

1. **Environmental Benefits:** By directing capital to green projects, these investments can significantly reduce greenhouse gas emissions, conserve natural resources, and mitigate climate change. This helps to internalize the environmental costs that traditional economic models often ignore.
2. **Economic Opportunities:** Green investment can drive economic growth by stimulating innovation, creating new "green jobs," and fostering new industries. Countries and companies that lead in this space can gain a competitive advantage in a world increasingly focused on sustainability.
3. **Financial Performance:** Studies have shown that companies with strong ESG credentials and green investment strategies can achieve higher financial returns in the long run. This is because they are often more resilient to market volatility, regulatory changes, and reputational risks.
4. **Policy and Regulation:** Governments and international organizations are playing a crucial role by providing incentives, setting up regulatory frameworks, and issuing instruments like green bonds to mobilize private capital for sustainable projects.

3.7 Impact of Digital Assets on Investment

Digital assets, like cryptocurrencies and non-fungible tokens (NFTs), have reshaped the investment landscape by introducing new opportunities and unique risks. They've moved from a niche interest to an emerging, recognized asset class that impacts how investors build and diversify their portfolios. Key Impacts on Investment are as follows:

1. **Portfolio Diversification:** Digital assets, particularly major cryptocurrencies, have historically shown a low correlation to traditional assets like stocks and bonds. This low correlation is a key reason for their inclusion in a diversified portfolio, as it can potentially reduce overall portfolio volatility and enhance risk-adjusted returns, even with a small allocation.

2. **High Volatility and Risk:** Digital assets are known for their extreme price swings, which can lead to significant gains but also substantial losses. This volatility risk is a major factor for investors to consider. Furthermore, the digital asset market is susceptible to risks like regulatory uncertainty, hacking, and fraud, which don't apply to traditional investments in the same way.

3. **Accessibility and Fractional Ownership:** The decentralized nature of digital assets allows for fractional ownership of valuable assets that were once inaccessible. For example, through tokenization, an investor can own a small share of a piece of real estate or fine art, which lowers the barrier to entry for smaller investors. This can increase market liquidity and democratize access to previously illiquid assets.

4. **New Investment Strategies:** The rise of digital assets has created new investment strategies and financial products. These include:

1) **Staking and Yield Farming:** Earning passive income by locking up digital assets to support a blockchain network.

2) **Decentralized Finance:** Using blockchain-based platforms to access financial services like lending and borrowing without a traditional intermediary.

3) **Digital Asset ETFs:** Exchange-Traded Funds that provide exposure to cryptocurrencies without requiring direct ownership or management of a digital wallet.

Risks and Challenges

1. **Regulatory Uncertainty:** The regulatory environment for digital assets is still evolving and varies greatly across countries. Changes in laws or new regulations can dramatically impact the value and legality of these assets.

2. **Security and Custody:** Digital assets are secured by cryptographic keys. If these keys are lost or stolen, the assets are gone, often with no recourse. This places a significant burden on investors to manage the security of their holdings.

3. **Valuation Challenges:** Unlike a company stock, which can be valued based on earnings or cash flow, many digital assets are difficult to value using traditional metrics. Their value is often driven by market sentiment, utility, and speculation, making it a challenge for investors to determine their "fair" price.

3.8 Concept of Behavioral Finance in Investment Decisions

Behavioral finance is a field that studies how psychology, emotions, and cognitive biases influence investment decisions. It challenges the traditional finance theory that assumes investors are always rational and act in their own best interest. Instead, it recognizes that human behavior is often driven by predictable, systematic errors that can lead to suboptimal investment outcomes.

Common Behavioral Biases in Investing

1. **Loss Aversion:** This is the tendency to feel the pain of a loss more intensely than the pleasure of an equivalent gain. It can cause investors to hold on to losing investments for too long in the hope that they will rebound, rather than selling to cut their losses. Conversely, they may sell winning investments too early to "lock in" a small gain, missing out on further growth.

2. **Herd Mentality:** This bias involves investors following the actions of the crowd, rather than relying on their own analysis. This can lead to asset bubbles, where people buy an asset simply because everyone else is, or panic selling during a market downturn, which can exacerbate a market crash.

3. **Overconfidence Bias:** Investors often overestimate their own knowledge and abilities, believing they can consistently outperform the market. This can lead to excessive trading, taking on too much risk, and under-diversification, which can result in lower returns due to higher transaction costs and greater exposure to risk.

4. **Confirmation Bias:** This is the tendency to seek out and favor information that confirms existing beliefs while ignoring information that contradicts them. An investor with this bias might only read articles that praise a stock they own, dismissing any negative news or contrary opinions, which can prevent them from making objective decisions.

5. **Anchoring:** Investors often rely too heavily on the first piece of information they receive (the "anchor") when making a decision. For example, an investor might be reluctant to sell a stock if its current price is below the price they bought it for,

using the purchase price as an anchor, even if the company's fundamentals have deteriorated.

Impact on Investment Outcomes

These biases can lead to a number of poor investment outcomes:

1) **Suboptimal Returns:** By holding onto losing stocks or selling winners too early, investors can significantly reduce their overall portfolio returns.

2) **Poor Diversification:** Overconfidence and familiarity bias can cause investors to concentrate their portfolio in a few stocks they know well, rather than diversifying across different asset classes, which can increase risk.

3) **Higher Costs:** Frequent trading driven by overconfidence can lead to higher transaction fees and taxes, eroding returns over time.

By understanding these psychological biases, investors can become more self-aware and disciplined. Many financial professionals use behavioral finance to help their clients recognize and counteract these tendencies, leading to more rational and effective long-term investment strategies.

Short Type Questions :

1. Autonomous Investment
2. Induced Investment
3. Ex-Ante and Ex-Post Investments
4. Discount Rate
5. Marginal Efficiency of Capital
6. Marginal Efficiency of Investment
7. Green Investment
8. Behavioral Finance

Essay Type Questions :

1. Explain Types of Investment?
2. Describe the Determinants of Investment?
3. Explain the Marginal Efficiency of Capital (MEC) ?
4. Describe Green Investment and Sustainable Capital?
5. Explain Impact of Digital Assets on Investment?
6. Explain Concept of Behavioral Finance in Investment Decisions?

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Module

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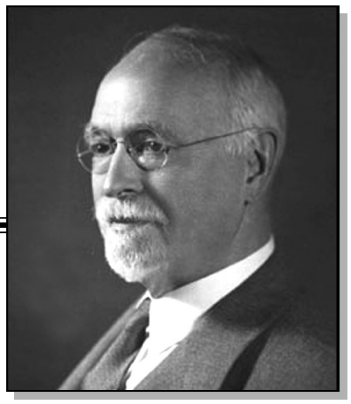

Irving Fisher
27 Feb 1867 - 29 April 1947

Supply of Money & Demand for Money

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4.1 Barter system of exchange and its defects

The barter system of exchange is an old method of trading where goods and services are exchanged directly for other goods and services without the use of money. It is essentially a commodity-for-commodity exchange economy.

Key Defects of the Barter System

The limitations of the barter system were the primary reasons for the invention and adoption of money. The major defects include:

1. **Lack of Double Coincidence of Wants:** This is the most significant defect. For a successful barter transaction, both parties must have a commodity that the other party wants and be willing to exchange it.

   Example: If Person A has wheat and wants cloth, they must find Person B who has cloth and wants wheat. If Person B wants shoes instead of wheat, the transaction cannot happen directly. This search for a "double coincidence" is often time-consuming and difficult.

2. **Lack of a Common Measure of Value (or Unit of Account):** There is no standard unit to express the value of different goods and services. It is difficult to determine the exact ratio of exchange. Without a common measure, every good must be valued in terms of every other good, making transactions complicated and often unfair.

3. **Indivisibility of Certain Goods:** Some goods cannot be easily divided into smaller units without losing their value or utility. If a person wants to exchange a cow (a single, indivisible asset) for several smaller, less valuable items (like a sack of grain and some tools), it is impossible to divide the cow to complete the proportional trade.

4. **Difficulty in Storing Wealth (or Value):** In a barter system, wealth must be stored in the form of specific, physical goods. Many goods, especially food items like grain and vegetables, are perishable and will spoil or deteriorate over time, leading to a loss of value. Storing large quantities of bulky goods is also inconvenient and expensive.

5. **Difficulty in Making Deferred Payments:** It is difficult to enter into contracts that involve future payments or credit transactions. If a loan is made in terms of a specific good (e.g., a promise to repay a debt in sacks of grain a year later), there is no guarantee that the quality of the good will be the same, and the value of the good may have changed significantly by the time of repayment, leading to disputes.

4.2 The Evolution of Money

The evolution of money is a journey that spans thousands of years, moving from simple direct trade to the complex digital systems of today. Each stage developed to solve the inefficiencies of the system that came before it. Here is a breakdown of the key stages in the evolution of money:

1. **Barter System (The Beginning):** Direct exchange of goods or services for other goods or services (Commodity-for-Commodity). The major drawback was the Double Coincidence of Wants-both parties had to simultaneously want what the other possessed. This made trade slow and limited.
2. **Commodity Money:** Certain widely valued, naturally occurring goods were adopted as a medium of exchange to overcome the limitations of barter. Examples: Cattle, grain, salt, tea, cowrie shells, and metals like copper or iron.
3. **Metallic Money (Coins):** Metals like gold, silver, and copper were used due to their durability, divisibility, and portability.The introduction of coins (around 7th century BCE in Lydia, modern-day Turkey) marked a major step. Coins were small, had a standardized weight, and were stamped with a seal (usually by the government or ruler) to certify their value and authenticity.
4. **Paper Money (Banknotes):** Initially, paper money emerged as a substitute for carrying heavy coins. Early paper notes (first used in China around the 7th century) were essentially receipts or promissory notes issued by goldsmiths or banks. They represented a claim to a specific amount of gold or silver that was stored safely with the issuer.
5. **Fiat Money:** The value of the currency is not backed by a physical commodity like gold or silver, but by the government's decree (fiat) that the currency is legal tender. Over time, as nations abandoned the gold standard (a system where every paper bill could be exchanged for a fixed amount of gold), currency transitioned to fiat money.
6. **Credit and Plastic Money:** Introduction of credit cards, debit cards, and electronic transfers. These represent bank money or electronic money, where physical currency rarely changes hands; instead, value is transferred electronically between bank accounts.
7. **Digital/Cryptocurrency:** Decentralized digital currencies (like Bitcoin and Ethereum) that operate independently of a central bank, often using blockchain technology to record and secure transactions. Represents the newest stage, characterized by high-tech security, transparency, and a push toward a truly global, permissionless system of value exchange.

4.3 Classification of Money

Money is not uniform in nature and its unit of value differs from country to country. Money usually depends on the unit of measurement. The monetary unit in our country is calculated as Rupee. It is calculated in the US as a dollar, in Japan as a yen and in England as a pound. Depending on the nature and type of currency, there are many types of currency in use. Money can be classified on the following different bases.

1. Based on Monetary System Criterion/Physical Characteristics of Money

2. Based on Nature of Issuer/Acceptability

3. Based on difference - Value of Money as Money (Money of Account) and Value of

Money as Commodity (Money Proper)

I. Monetary System Criterion: Money can be classified into four types based on the monetary system or Physical Characteristics of Money used. 1) Commodity money, 2) Metallic money, 3) Paper money, 4) Credit money.

1. Commodity money: Commodity money is money whose value comes from a commodity of which it is made. Commodity money consists of objects having value as well as their value in buying goods. Examples of commodities that have been used as mediums of exchange include gold, silver, copper, salt, peppercorns, tea, shells, cigarettes, cowries and barley etc.

2. Metallic Money: Money made of some metal is called metallic money. In the past, metals such as gold, silver, copper and nickel were used as money. Metallic money is divided into three types. 1) Full body or standard money, 2) Token money, 3) Subsidiary (small) coins.

i. Full body or Standard Money: Standard Money is the money of ultimate redemption. The face value of a standard coin is equal to its intrinsic value. In our country, there were one rupee face values of silver coins circulated from 1835 to 1893. At that time the metal value of silver was one rupee.

ii. Token Money: It is that unit of currency the face value for which is higher than its intrinsic value. Ex: India's rupee is a token money.

iii. Subsidiary money: In our country, the standard money is one rupee. However, in order to carry out small transactions, a rupee unit is divided into a hundred units and stated as paise. It was issued as 5, 10, 25 and 50 paise coins for use.

3. Paper money: Money made of paper, such as currency notes, is called paper money. Paper money is classified into the following parts.

i. Documentary or Receipt money: When goods are stored in warehouses and used as proof of receipt, it is treated as document (receipt) money.

ii. Representative paper money: Currency notes issued backed by 100 per cent precious metal base is called representative paper money. If any person wants to convert the note into metal, there is a possibility to change it.

iii. Convertible paper money: It is not 100 per cent backed by precious metals. However it can be converted into standard coins at the option of the holder.

iv. Inconvertible paper money, which cannot be converted into full-bodied money. Indian one rupee note is a good example of inconvertible paper money. It is issued without the involvement of metallic reserves. As time goes on, Governments observed that people were not converting paper money into metal, so that they began issuing notes worth more than the reserves of gold. In our country the minimum reserves system has been adopted since 1957. Accordingly, Rs 115 crore worth of gold and Rs 85 crore worth of foreign exchange are the minimum reserves that form the base for issuing currency. It can be categorized into two types :

a) Fiat money and b) Credit money.

a) Fiat money: Fiat money is another type of inconvertible paper money. It is that money which circulates in the country, under extra-ordinary circumstances, on the command of the State. It is issued generally at a time of crisis. Fiat money is issued by the government without any backing of reserve.

b) Credit money: Credit money is also known as bank money refers to bank deposits kept by people with banks which are payable on demand and can be transferred from one party to another via the use of cheque. The cheque is an instrument used to transfer bank deposits and it offers the same conveniences as money.

II. Nature of Issuer / Acceptability :

Money can be divided into two types based on acceptability.

1) Legal tender Money 2) Optional currency.

1) Legal Tender Money: Legal tender is the money that is recognised by the law of the land, as valid for payment of debt. It must be accepted for discharge of debt. The RBI Act of 1934, which gives the central bank the sole right to issue bank notes, states that "Every bank note shall be legal tender at any place in India in payment for the amount expressed therein". It is of two types. i) Unlimited legal tender money, ii) Limited legal tender money.

i) Unlimited Legal Tender Money: Currency notes are unlimited legal tender and can be offered as payment for dues of any size.

ii) Limited Legal Tender Money: In India, coins function as limited legal tender. Therefore, coins of one rupee and above are legal tender for dues up to Rs. 1,000 and 50 paise coins for dues up to Rs. 10 (Coinage Act, 2011).

2. Non Legal Tender money or Optional money: The currency not issued by a government or central bank is called non-legal tender money or optional money. Credit money is created by commercial banks. Examples of credit money are cheques, drafts, etc. They are also called optional money. It has no legality. The acceptance or disapproval of this money depends on the will of the individuals.

III. Based on currency difference:

Money can be classified into two types based on difference. 1) a) Proper Money or Actual money, b) Money of Account, 2) Near money

1.a) Proper Money or Actual money: Actual money is that which actually circulates in the economy. It is used as a medium of exchange for goods and services in a country. For example, paper notes of different denominations and coins in actual circulation in India constitute the actual money.

1.b) Money of Account: Money of account is that form of money in terms of which the accounts of a country are maintained and transactions made. For example, rupee is the money of account in India. Generally, actual money and money of account are the same for a country; however, sometimes actual money may be different from the money of account. For example, rupee and paise are the money of account in India. In real practice, however, one paisa coin is nowhere visible.

2. Near Money: Legal tender money has absolute liquidity. With the size of the business growing in the modern economy, credit money has become an essential one. The near money examples are, cheques, bonds, treasury bills, time deposits and hundis etc.

Classification of money explained in a nutshell Chart No 4.1

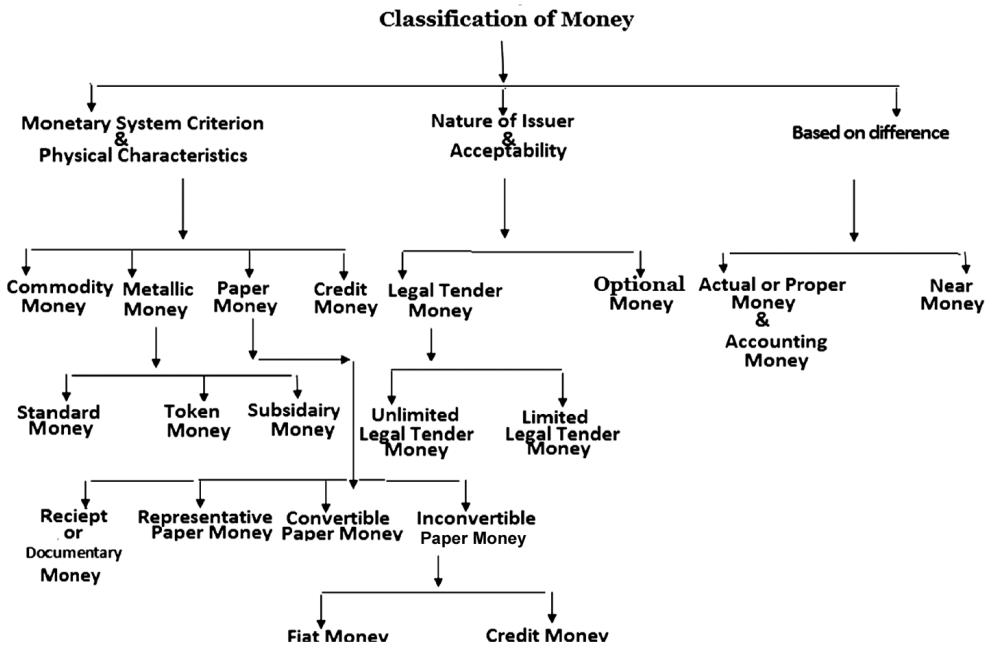

Chart 4.1

4.4 Functions of Money

Money is a matter of functions four, a medium, a measure, a standard, a store. Money in a modern economy performs important functions which have been classified by David Kinley as follows:

1. Primary functions include the most important functions of money, which it must perform in every country. These are also called fundamental and original functions like the medium of exchange and measure of value.

2. Secondary functions refer to those functions of money which are supplementary to the primary functions. These functions are derived from primary functions and, therefore, they are also known as 'Derivative Functions'. These include functions like standard of deferred payments, store of value and transfer of value.

3. Contingent functions like distribution of income, basis of credit, maximisation of utility and Liquidity to wealth etc.

I. Primary Functions :

1. **Medium of exchange:** This is the primary and main function of money. All other functions of money are derived from this function only. Money acts as medium of exchange as it contains the qualities of Uniformity, Durability, Portability, Divisibility and general acceptability. Money serves as a medium of exchange and facilitates the buying and selling of goods, thereby eliminating the need for double coincidence of wants as under barter.

2. **Measure of value:** Money has also removed the difficulty of barter system by serving as a common measure of value. The values of various commodities are expressed in terms of money. Money as a measure of value has made transactions simple and easy. It is because money is used as a medium to exchange goods, that each good gets a value in terms of money. As such, money also serves as a unit of account.

II. Secondary Functions :

1. **Store of Value:** Money serves as a store of value. As money possesses value, people save a part of their earnings in the form of money. People also save assets in the form of Bonds, Saving certificates etc.

2. **Standard of Deferred Payments:** Money has always been used as a standard of deferred payment. This function of money has attained more importance in modern times with the extension of trade based on credit. As a result of this function, it has become possible to express future payments in terms of money. A borrower who borrows a certain sum in the present undertakes to pay the same in future.

Transfer of Values: Money functions as medium of exchange and store of value; money value can transfer from one person to another person and from one place to another place.

III. Contingent Functions :

1. **Distribution of National Income:** Money facilitates the distribution of national income among the various factors of production. Land, labour, capital and organization all co-operate in an act of production and the product is the result of their joint efforts, which belongs to all of them.
2. **Marginal Utility:** Concept like utility is measured in terms of money. A consumer as well as a producer measures the utilities of different goods and factors of production with the help of money and tries to get maximum satisfaction or maximum returns.
3. **Basis of Credit:** Credit is the basis of modern economic progress. Money constitutes the basis of credit. Banks create credit with the help of money. Moreover, money gives liquidity to various forms of wealth. A person by keeping his wealth in the form of money renders it most liquid.
4. **Liquidity to wealth:** Money is the most liquid of all assets i.e., money can be readily exchanged for goods and services without any difficulty. Of all the functions, the most important function of money is that it serves as a medium of exchange and as such also becomes a means of payment. Money in the form of a generally acceptable commodity, in the process of exchange between goods, at once, becomes a unit of account and a measure of value. The following Chart 4.2 clearly shows the various functions of money.

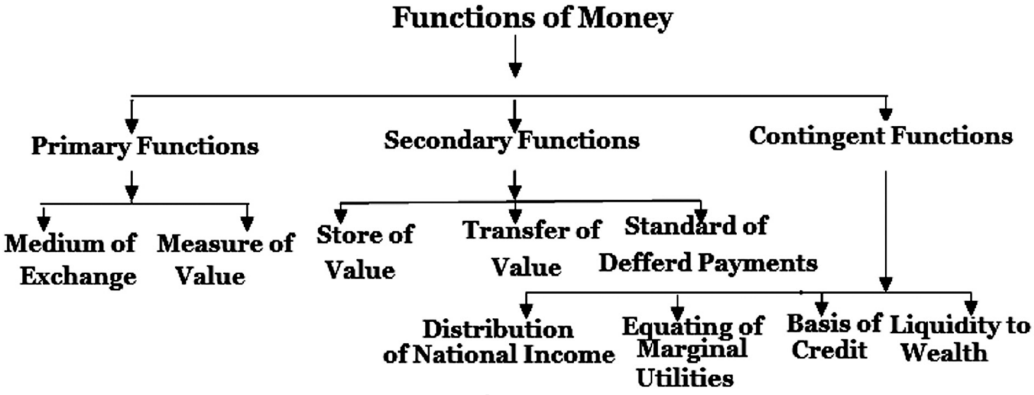

Chart 4.2

Paul Einzig has classified functions of money into two broad categories, namely static and dynamic functions of money. Static Functions: Static functions of money are those which are related to the operation of economy and do not generate any momentum or force. On this basis the functions of money like medium of exchange, store of value, standard of deferred payments, transfer of value etc. can be termed as primary and static functions for these functions do not generate any force or momentum.

Dynamic Functions: Dynamic functions are those which bring about changes in the economic conditions such as price level, level of production and employment etc. Affecting liquidity of capital and providing a basis for credit, come under the category of dynamic functions, for these bring about changes in the level and nature of economic activities. Monetary measures are formulated only with a view to performing dynamic functions of money.

4.5 Money Supply

The money supply is the entire stock of currency and other liquid instruments circulating in a country's economy as of a particular time. Briefly money supply is the stock of money in circulation on a specific day. Thus two components of money supply are

1. Currency (Paper notes and coins).

2. Demand deposits of commercial banks.

Again it needs to be noted that total stock of money is different from total supply of money. Supply of money is only that part of total stock of money which is held by the public at a particular point of time. In other words, money held by its users in spendable form at a point of time is termed as money supply.

The stock of money held by government and the banking system are not included because they are suppliers or producers of money and cash balances held by them are not in actual circulation. In short, money supply includes currency held by public and net demand deposits in banks.

Measures of Money supply: The total stock of money in circulation among the public at a particular point of time is called money supply. The measures of money supply in India are classified as M1, M2, M3 and M4 along with M0. This classification was introduced in April 1977 by Reserve Bank of India. M1 is the most commonly used measure of money supply because its components are regarded as the most liquid assets. Each measure is briefly explained below.

Reserve Money (M0): It is also known as High-Powered Money, monetary base, base money etc. M0 = C + R + OD C=Currency in Circulation, R=Bankers' Deposits with RBI,

OD= other deposits (Non-Government) with RBI. It is the monetary base of economy.

1. M1 = C + DD + OD. (Narrow Money)

Here C denotes currency (paper notes and coins) held by public, DD stands for demand deposits in banks and OD stands for other deposits in RBI. Demand deposits are deposits which can be withdrawn at any time by the account holders. Current account deposits are included in demand deposits. But savings account deposits are not included in DD because certain conditions are imposed on the amount of withdrawals and number of withdrawals. OD stands for other deposits with the RBI which includes demand deposits of public financial institutions, demand deposits of foreign central banks and international financial institutions like IMF, World Bank, etc.

2. M2 = M1 + Post Office Saving Banks
3. M3= M1 + Time-deposits of Banks (Broad Money)
4. M4 = M3 + Post Office saving.

In practice, M1 is widely used as measure of money supply which is also called aggregate

monetary resources of the society. All the above four measures represent different degrees of liquidity, with M1 being the most liquid and M4 being the least liquid. It may be noted that liquidity means ability to convert an asset into money quickly and without loss of value.

New Money Supply Concepts: In 1997, YV Reddy was appointed as chairman of the Working Group to study monetary supply in our country. In 1998, the working group proposed new money supply measures. Based on the recommendations of the working group, M2 and M4 concepts have been dropped from the money supply.

1. M_1 = C + DD + OD. (Narrow Money)
2. M_3 = M_1 + Short term deposits + Short and long-term bank loans (Broad Money)

Presently, M_1 (Narrow money) and M_3 (Broad money) only two concepts are in the money supply. Apart from these two concepts, M0, money concept also considered as reserve money or High-powered money. On the recommendations of the Working Group on Money Supply (Dr. Y.V. Reddy, Chairman 1998), RBI introduced three types of liquidity aggregates.

1. L_1 = M_1 + All types of Post office deposits (excluding National Saving Certificates).
2. L_2 = L_1 + Term Deposits of Financial Institutions + Deposit Certificates issued by Financial Institutions + Term Loans of Financial Institutions.
3. L_3 = L_2 + Deposits of people at non-banking financial institutions. In the chart 4.3 RBI money supply concepts are explained in a nutshell.

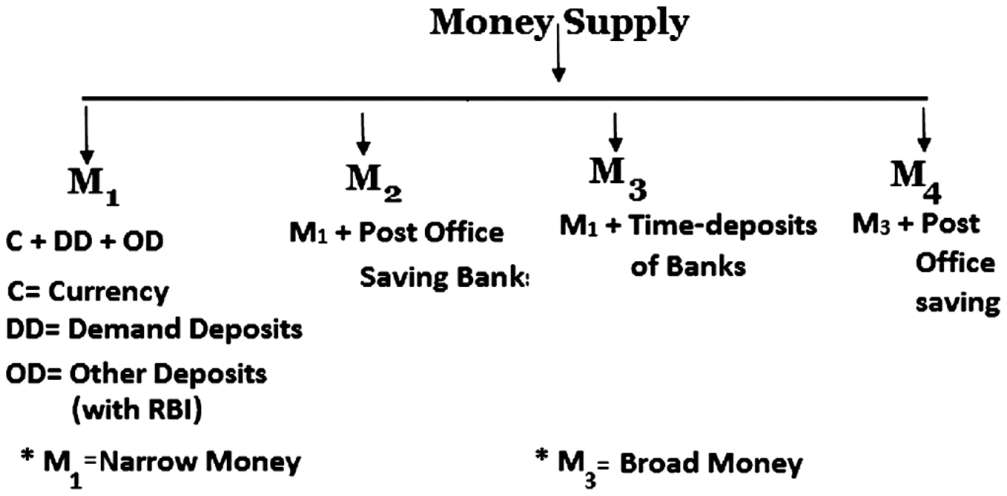

Chart 4.3

4.6 Central Bank Digital Currency (CBDC)

A Central Bank Digital Currency (CBDC) is a digital form of a country's official currency, issued and backed by the nation's central bank. It's essentially a digital version of physical cash. Unlike cryptocurrencies like Bitcoin, which are decentralized and often volatile, a CBDC is a government-issued and regulated form of money.

How It Works

CBDCs can be designed in different ways, but the most common models involve a two-tiered system. The central bank issues the digital currency to commercial banks, which then distribute it to the public. Users can hold and transact with the CBDC through digital wallets provided by banks or other financial institutions.

Key features of a CBDC often include:

1. **Legal Tender:** A CBDC is a direct liability of the central bank, just like physical cash, making it legal tender.
2. **Parity with Cash:** One unit of CBDC is equivalent to one unit of the physical currency (e.g., 1 Digital Rupee = 1 Indian Rupee).
3. **Centralized Control:** The central bank maintains control over its issuance and management, allowing for the implementation of monetary policy.
4. **Programmable Money:** In some cases, a CBDC can be "programmed" for specific uses, such as providing targeted aid or ensuring funds are used for a particular purpose, like agricultural loans.
5. **Offline Functionality:** Some CBDC designs include the ability to make payments in areas with limited or no internet connectivity.

Types of CBDCs

There are two main types of CBDCs being explored globally:

I. **Retail CBDC:** This is a digital currency for the general public, designed for everyday transactions by households and businesses.

II. **Wholesale CBDC:** This is for use by financial institutions for interbank payments and the settlement of securities. It's not intended for the general public.

Benefits and Risks

Central banks are exploring CBDCs for a variety of reasons, but the technology also presents certain challenges.

Potential Benefits:

1. **Improved Payments:** CBDCs can offer faster, more efficient, and cheaper payment systems, especially for cross-border transactions.

2. **Financial Inclusion:** They can provide a secure and reliable way for unbanked and underbanked populations to access financial services, as a digital wallet can be used with a mobile phone without a traditional bank account.
3. **Monetary Policy:** CBDCs could provide central banks with new tools for implementing monetary policy, such as the ability to apply interest rates directly to digital currency holdings.
4. **Reduced Costs:** CBDCs could lower the costs associated with printing, distributing, and managing physical cash.
5. **Countering Illicit Activity:** The transparent nature of a CBDC can help in combating money laundering and the financing of terrorism.

Potential Risks and Challenges:

1. **Financial Stability:** A major concern is the risk of "bank runs." In a financial crisis, people might pull large amounts of money out of commercial banks and convert it into CBDCs, potentially destabilizing the banking system.
2. **Privacy:** While some CBDC designs aim for privacy, the digital trail of transactions raises concerns about government surveillance. Finding the right balance between privacy and the need to prevent illicit activity is a key challenge.
3. **Cybersecurity:** A centralized digital currency system could be a high-value target for cyberattacks, making robust security a critical requirement.
4. **Adoption:** Gaining public trust and widespread adoption is a challenge. People may be hesitant to embrace a new form of money, especially if it requires learning new technology.

Global Status and Examples :

Many countries are actively researching and piloting CBDCs.

1. **China:** The People's Bank of China has the largest CBDC pilot in the world, the Digital Yuan (e-CNY), which is being tested for a wide range of use cases.
2. **India:** The Reserve Bank of India has launched pilots for its Digital Rupee (e-Rupee) for both retail and wholesale use.
3. **The Bahamas:** The Bahamas was one of the first countries to fully launch a CBDC, the Sand Dollar, in 2020.
4. **Jamaica:** Jamaica's CBDC, Jam-Dex, was fully launched in 2022.
5. **Nigeria:** The e-Naira was launched in Nigeria in 2021.
6. **European Union:** The European Central Bank is preparing for a potential digital euro project.

4.7 The Role of FinTech

FinTech, a portmanteau of "financial technology," is the use of innovative technology to improve, automate, and streamline financial services. Its role has evolved from a simple tool for traditional banks to a transformative force that is democratizing finance, increasing efficiency, and changing the way individuals and businesses interact with money. The Core Roles of FinTech are as follows:

1. **Enhancing Accessibility and Financial Inclusion:** FinTech has a crucial role in bringing financial services to the unbanked and underbanked populations. Mobile banking apps, digital wallets, and peer-to-peer (P2P) lending platforms bypass the need for physical bank branches, making it possible for people in remote areas to access loans, savings accounts, and payment services. This is a powerful driver of economic development and financial equality.

2. **Improving Efficiency and Lowering Costs:** By automating processes, FinTech reduces the operational costs for both financial institutions and their customers. For example, algorithmic-driven robo-advisors offer investment advice at a fraction of the cost of a human financial advisor. Similarly, online lending platforms and digital payment systems reduce the overhead associated with paper-based transactions and physical infrastructure, leading to lower fees for consumers.

3. **Driving Innovation and Competition:** FinTech companies are often agile startups that can quickly develop and deploy new technologies, pushing traditional financial institutions to innovate or risk being left behind. This competition leads to a better customer experience, with more user-friendly interfaces, faster service, and a wider range of tailored products. Examples of this include:

1) **Neobanks:** Digital-only banks with no physical branches that offer mobile-first services with lower fees.

2) **Open Banking:** A system where banks securely share customer data with third-party FinTech apps (with customer consent), allowing for a new ecosystem of personalized financial products.

4. **Revolutionizing Payments:** The way we pay for goods and services has been fundamentally changed by FinTech. Mobile payment apps (e.g., Apple Pay, Google Pay, PayPal) and real-time payment systems have made transactions instant and convenient. This has reduced reliance on physical cash and credit cards, creating

a more seamless and interconnected digital economy.

5. **Democratizing Investment:** FinTech has lowered the barrier to entry for investing. Platforms with low or no trading fees and fractional share ownership allow individuals to invest with small amounts of money. Robo-advisors use algorithms to provide automated, personalized portfolio management, making wealth management accessible to a much broader audience than ever before.

Technologies Driving FinTech

The role of FinTech is underpinned by several key technologies:

1. **Artificial Intelligence (AI) and Machine Learning:** Used for personalized financial advice, risk assessment, fraud detection, and enhancing customer service through chatbots.
2. **Blockchain and Distributed Ledger Technology (DLT):** Provides secure, transparent, and decentralized ways to record transactions, which is the foundation of cryptocurrencies and could revolutionize cross-border payments.
3. **Big Data Analytics:** FinTech companies leverage vast amounts of data to understand customer behavior, offer customized products, and make more accurate credit decisions.
4. **Application Programming Interfaces (APIs):** These are the building blocks of open banking, allowing different software applications to communicate with each other, creating an interconnected financial ecosystem.

In conclusion, FinTech is not just a technological tool; it is a catalyst for a more inclusive, efficient, and user-centric financial system. It is reshaping the industry by challenging traditional business models, empowering consumers, and creating a new era of financial innovation.

4.8 Fisher's Quantity Theory of Money

The origin of the quantity theory of money as an explanation of changes in the prices as a function of changes in quantity of money can be found in the writings of mercantilist writers. In his monumentally scholarly work entitled "The theory of Prices" Arthur W. Marget has traced the origin of the quantity theory of money in the fifteenth century. According to Joseph A. Schumpeter, Jean Bodin was the first discoverer of the quantity theory of money. It was believed by the economists that the quantity of money in the economy is the prime cause of fluctuations in the price level. The theory that increases in the quantity of money lead to the rise in the general price level was effectively put forward by Irving Fisher in 1911 in his book "The Purchasing Power of Money". The quantity theory of money seeks to explain the value of money in terms of changes in its quantity. Stated in its simplest form, the quantity theory of money says that the level of prices varies directly with quantity of money. The theory can also be stated in these words: The price level rises proportionately with a given increase in the quantity of money. Conversely, the price level falls proportionately with a given decrease in the quantity of money, other things remaining the same. There are several forces that determine the value of money and the general price level. The general price level in a community is influenced by the following factors:

1. The volume of trade or transactions. (T): The volume of trade or transactions depends upon the supply or amount of goods and services to be exchanged. The classical and neoclassical economists who believed in the quantity theory of money assumed that full employment of all resources prevailed in the economy. Resources being fully employed, the total output or supply of goods cannot increase. Therefore, those who believed in the quantity theory of money assumed that the total volume of trade or transactions remained the same.

2. The quantity of money. (M): The second factor in the determination of general level of prices is the quantity of money. It should be noted that the quantity of money in the economy consists of not only the notes and currency issued by the Government but also the amount of credit or deposits created by the banks.

3. Velocity of circulation of money (V): The third factor influencing the price level is the velocity of circulation. A unit of money is used for exchange and transactions purposes not once but several times in a year. During several exchanges of goods and services, a unit of money passes from one hand to another. Thus, if a single rupee is used five times in a year for exchange of goods and services, the velocity of circulation is 5. Fisher's Equation of Exchange: An American economist, Irving Fisher, expressed the relationship between the quantity of money and the price level in the form of an equation, which is called 'the equation of exchange'.

PT = MV……. (1)
Or P = MV/T……..… (2)
P = Price level

T = Transactions
M = quantity of money; and V = Velocity of money.

The equation (1) or (2) is an accounting identity and true by definition. This is, because MV which represents money spent on transactions must be equal to PT which represents money received from transactions. However, the equation of exchange as given in equations (1) and (2) has been converted into a theory of determination of general level of prices by the classical economists by making some assumptions. First, it has been assumed that the physical volume of transactions is constant. Another crucial assumption is that transactions velocity of circulation (V) is also constant.

Now, with the assumptions that T and V remain constant, the price level P depends upon the quantity of money M; the greater the quantity of M, the higher the level of prices. Let us give a numerical example. Suppose the quantity of money is Rs. 5,000 in an economy, the velocity of circulation of money (V) is 5; and the total output to be transacted (T) is 2500 units, the price level (P) will be:

$$P = \frac{MV}{T}$$

$$= \frac{5{,}000 \times 5}{2{,}500}$$

$$P = \frac{25{,}000}{2{,}500} = 10$$

Rs 10 per Unit

If now, other things remaining the same, the quantity of money is doubled, i.e., increased to Rs.10,000 then:

$$P = \frac{10{,}000 \times 5}{2{,}500}$$

$$P = \frac{50{,}000}{2{,}500} = 20$$

Rs 20 per Unit

M ↑ ⟶ P ↑
M ↓ ⟶ P ↓

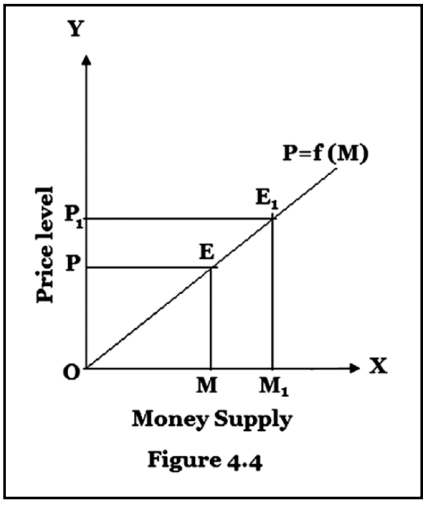

Figure 4.4

We thus see that according to the quantity theory of money, price level varies in direct proportion to the quantity of money. A doubling of the quantity of money (M) will lead to the doubling of the price level. Further, since changes in the quantity of money are assumed to be independent or autonomous of the price level, the changes in the quantity of money become the cause of the changes in the price level.

The Fisher's quantity theory of money is illustrated in Figure 4.4. We took the quantity of money supply on the OX axis and the price level on the OY axis. As the quantity of money supply increases from OM to OM1 the price level increased from OP to OP1. As price level rises, value of money decreases. Therefore, there is an inverse relationship between the quantity of money supply and the value of money. The credit money M1 created by commercial banks and its velocity V1, were incorporated in the Fisher equation. Now we will write the equation as under:

$$P = \frac{MV + M_1V_1}{T}$$

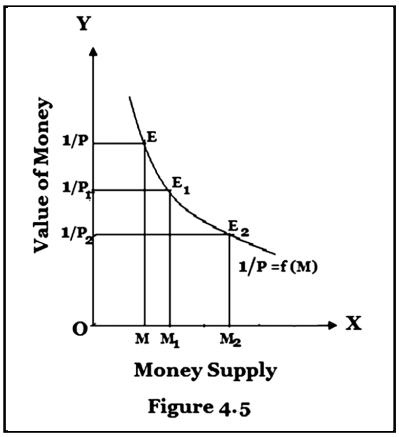

Figure 4.5

The quantity theory of money reveals that there is a direct relationship between the price level and supply of money. It also reveals that, there is a negative relationship between the supply of money and the value of money. When prices are increasing, people can purchase fewer commodities with the money supply in the economy. So the value of the money decreases. The negative relationship between supply of money and the value of money is illustrated in diagram 4.5. The graph shows the money supply on the OX axis and the money value on the OY axis. When the money supply is a small quantity OM, the money value is the highest at 1/P. In the figure the money supply increased to OM1 and then to OM2, the money value decreased to 1/P1 and then to 1/P2. The curve 1/P = f (M) describes the inverse relationship between the money supply and the value of money.

Quantity theory of money - Criticisms

1. Unrealistic Assumptions: The quantity theory of money as stated by Prof. Fisher is based on unreal assumptions like the existence of full employment of resources and stability of expenditure. The theory assumes that other things like V and T remain constant.

2. It Fails to Explain Trade Cycle: The transactions approach to the quantity theory of money does not help in explaining the trade cycle though it may be taken as a satisfactory explanation of the long-term trends of prices.

3. The Theory is Useful in the Long Period: The quantity theory of money is also criticized on the ground that it explains only long-run phenomenon; it does not help to study the short-run phenomenon.

4. It Does not Explain the Causal Relationship: The theory fails to establish the causal relationship between Price and Money. It does not explain the causes which bring about changes in the price level.

5. No Integration of Monetary Theory with Price Theory: In the classical and neo-classical version of the theory, price formation is isolated from monetary phenomena. Money was considered a veil and played a passive role, only as a translator of the values of commodities in terms of money. Thus, there could be no integration of monetary theory with the theory of relative prices.

6. It Ignores Money as a Store of Value: The cash transactions equation upholds money because it is a good medium of exchange. Its great fault is that it completely ignores the significant role of money which it plays as a store of value.

7. Mutually Inconsistent: The theory is criticized on the ground that some of the elements used in the equation are mutually inconsistent for example: P includes all sorts of prices, wholesale as well as retail, wages and profits. Some prices move fast, while others are rigid. Similarly, T includes goods as well as services. Further, whereas M refers to a point of time, V refers to the velocity of money over a period; thus, the quantity theory of money is said to consist of mutually inconsistent elements.

8. Undue Emphasis on Quantity of Money: Quantity theorists wrongly stress the role of the quantity of money as the main determinant of price level. Keynes, however, points out that the change in economic activity or the price level is caused not by a change in the quantity of money alone but also by other fundamental factors like income, expenditure, saving and investment.

9. Static: Quantity theory of money has been criticized on the ground that it is highly static. It applies under conditions where things remain constant but ours is a dynamic world, where things are fast changing.

4.9 Cambridge - Cash Balance Approach

The cash balance version of the quantity theory of money was popularized by Dr. Marshall and other Cambridge economists like Pigou, Robertson, Keynes. According to cash-balance approach, the value of money depends upon the demand for money. But the demand for money arises not on account of transactions but on account of its being a store of value. Thus, according to the advocates of this theory the real demand for money comes from those who want to hold it on account of various motives and not from those who simply want to exchange it for goods and services. Hence, instead of interpreting the 'demand for money' with reference to its 'medium of exchange' function as is done in the transactions approach; it is interpreted with reference to the 'store of value' function of money in the cash balance. The community's demand for real cash balances in this sense varies from time to time. Thus, given the state of trade (T) and the volume of planned transactions over a period of time, the community's total demand for real money balances can be represented as a certain fraction (K) of the annual real national income (Y). The following lines from Marshall explain clearly the substance of the cash-balance version of the quantity theory, "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 or a tenth or a twentieth."

According to cash balance approach, the value of money depends upon the demand for money to be kept as cash. As far as the Cambridge approach is concerned, the principal determinant of people's taste for money holding is the fact that it is a convenient asset to have, being universally acceptable in exchange for goods and services. The more transactions an individual has to undertake the more cash he wants to hold.

Let us illustrate it with an example:

1. Suppose money supply in cash and bank deposits (M) = Rs. 1,000.
2. The total annual national income (Y) = 10,000
3. The income (goods) which the community wants to hold in money (K),

   say 1/5x10,000 = 2,000 Units

Then, the value of money = 2,000/1000 = KY/M = 2 units of goods, or price level P = M/KY = 1/2 = Re. 0.50 per unit. It is, therefore, clear that the value of money is found by dividing the total amount of goods, which the community wants to hold out of the total income (KY), by the amount of the supply of the money held by the public (M), and the price level (P) is found out by dividing the money supply (M) by the amount of goods which the community wants to hold (KY), as the price level is the opposite of the value of money.

Pigou expresses it in the form of an equation:

P = KR/M or (M/KR) where P stands for the value of money or its inverse the price level (M/KR), M represents the supply of Money, R the total national income and K represents that fraction of R for which people wish to keep cash. Prof. D.H. Robertson's equation is similar to that of Prof. Pigou's with a little difference. Prof. Robertson's equation is:

M = PKT or P = M/KT

Where P is the price level, T is the total amount of goods and services (like R of Pigou), K represents the fraction of T for which people wish to keep cash. Prof. Robertson's equation is considered better than that of Pigou as it is more comparable with that of Fisher. It is the best of all the Cambridge equations, as it is the easiest.

Criticism - Cash Balances Version

1. Though developed by Marshall and Pigou and popularized further by Keynes, this approach does not consider the various motives for holding money. Cambridge approach to the quantity theory ignored the speculative demand for money which turned out to be one of the most important determinants for holding money. Ignoring the speculative demand for money meant that the linkage between the theories of the rate of interest and the level of income through the demand for money was not complete.
2. Although Cambridge equation brought into the picture the level of income, yet it ignored other elements, like productivity, thrift, liquidity preference—all necessary in a comprehensive theory of the value of money.
3. Cambridge approach like Fisher's approach also assumes K and T as given, thus, it becomes subject to those criticisms, which were leveled against Fisher's approach.
4. The Cambridge approach does not furnish an adequate monetary theory which could be utilized to explain and analyse the dynamic behaviour of prices in the economy, as it does not tell us by how much price and output shall change as a result of a given change in money supply in short period.
5. The cash balances approach fails to assign an explicit role to the rate of interest thereby creating an impression that changes in the supply of money are directly related to the price level. A realistic theory of prices can hardly ignore the vital role of the rate of interest.
6. By assuming that an increased desire for holding cash balance leads, pari passu, to a fall in the price level to the same extent, the theory is assuming the elasticity of demand for money to be unity. Unitary elasticity of demand for money means that a 10 percent increase in the demand for cash balances (money) diminishes the price level by 10 per cent. This is true only when the stock of money and the volume of goods and services remain constant. The volume of goods and services which money buys is bound to change with variations in the money supply. Hence, the elasticity of demand for money cannot be assumed to be unity except in a stationary state.
7. The theory cannot explain the phenomenon of trade cycle, i.e., why prosperity follows depression and vice versa. Moreover, the theory deals with the purchasing power of money in terms of consumption goods only. The cash balance theory does not explain the real forces which account for the price level. It ignores such important variables as income, saving and investment. It explains that changes in the demand for money may bring about changes in the value of money, but it does not explain clearly the factors which cause change in the demand for money, which in turn, are very many and more so in a complex dynamic economy.

4.10 Mobile Payments and Blockchain in Financial Transactions

Mobile payments and blockchain are two powerful technologies that are reshaping the financial landscape, though they serve different core functions. While mobile payments focus on user convenience and accessibility for everyday transactions, blockchain provides the underlying infrastructure for a secure, transparent, and decentralized system.

Mobile Payments: The User-Facing Revolution

Mobile payments are financial transactions conducted using a mobile device, such as a smartphone or tablet. They have become ubiquitous due to their ease of use, eliminating the need for physical cash or cards.

1) **How They Work:** Most mobile payment systems use technologies like Near-Field Communication (NFC), QR codes, or digital wallets. For example, when you use Apple Pay or Google Pay, your phone transmits a secure, tokenized version of your card information to the point-of-sale terminal via NFC.

2) **Key Features:** Mobile payments are all about convenience and speed. They make paying for goods and services seamless, both online and in-store, and can be integrated with loyalty programs and other features.

3) **Centralized Nature:** These systems are typically centralized, meaning they rely on a financial intermediary (like a bank, payment processor, or a tech company like Apple or Google) to authenticate and process the transaction. This introduces intermediaries, which can add cost and time, especially for cross-border payments.

Blockchain: The Foundational Technology

Blockchain is a decentralized, distributed digital ledger that records transactions across a network of computers. Each transaction is a "block" that is cryptographically linked to the previous one, creating a tamper-proof chain. It is the technology behind cryptocurrencies like Bitcoin.

1) **How It Works:** A transaction is initiated and then broadcast to a network of computers, called "nodes." These nodes verify the transaction using a consensus mechanism. Once verified, the transaction is added to a new block and permanently recorded on the chain. This process ensures immutability and transparency.

2) **Key Features:** Its main advantages are security through cryptography, the elimination of intermediaries, and immutability, as transactions, once recorded, cannot be altered.

3) **Decentralized Nature:** Unlike traditional financial systems, blockchain doesn't require a central authority to validate transactions. This peer-to-peer structure reduces the reliance on banks and other financial institutions.

The Synergy and Future Outlook

While they are distinct, mobile payments and blockchain can be integrated to create a more efficient and secure financial system. The primary role of blockchain in this synergy is to provide a more robust backend for mobile payment apps.

1) **Enhanced Security:** By leveraging blockchain, mobile payments can become more secure. The immutable nature of the ledger makes it extremely difficult for fraudsters to manipulate transactions. Each transaction is cryptographically verified, reducing the risk of fraud.

2) **Faster and Cheaper Cross-Border Payments:** One of the most significant benefits is in international transactions. Traditional wire transfers are slow and expensive, as they involve multiple banks. A blockchain-based mobile payment system could facilitate instant, peer-to-peer international transfers with much lower fees.

3) **Smart Contracts:** Blockchain can enable smart contracts to be integrated into mobile payments. A smart contract is a self-executing contract where the terms are written directly into code. This could automate payments for services or goods, triggering a transfer of funds only when a specific condition (e.g., product delivery) is met.

4) **Financial Inclusion:** When combined, these two technologies can significantly advance financial inclusion. Mobile devices are widespread, and a blockchain-based mobile payment system could provide a secure and accessible digital banking alternative for people without access to traditional banks.

Short Type Questions :

1. Evolution of Money
2. Exchange Equation
3. Measures of Money Supply
4. Commodity Money
5. Medium of Exchange
6. Actual Money - Money of Account
7. Role of FinTech

Essay Type Questions :

1. Examine the drawbacks of the barter system of exchange
2. Describe the Functions of Money
3. Describe the Classification of Money
4. Explain Fisher's quantity theory of money (or) transaction approach
5. Critically examine the Cambridge cash-balance approach.
6. Explain Central Bank Digital currencies
7. Mobile payments and Blockchain in Financial Transactions

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Module

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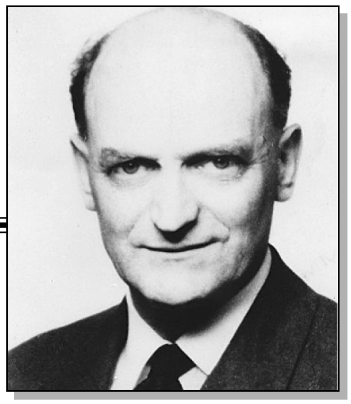

A.W. PHILLIPS

18th Nov, 1914 - 4th Mar, 1975

Inflation & Business Cycles Fluctuations

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5.1 Inflation - Meaning, definitions

Inflation is also a key concept in macroeconomic analysis. Many countries in the world are facing the problem of inflation today. Inflation not only affects the economic life and welfare of the people but in some cases challenges the stability of the government. That is why global economists focus on inflation issues. Modern governments are taking policy measures to address inflation issues.

Definitions of inflation

Almost everyone is sure that they know what inflation exactly is, but it remains a source of a great deal of confusion because it is difficult to define it unambiguously. Inflation may be defined as 'a sustained upward trend in the general level of prices' and not the price of only one or two goods. The rise in prices and the phenomenon of inflation are interrelated. Price rise is a situation, when prices of commodities and services increase and purchasing power of money also declines. But when price rise is a result of increased expenditure without a corresponding increase in output, the phenomenon is known as inflation. If the price rise is caused by an increase in the volume of currency, it is known as currency inflation. The main cause of rise in general price level, according to some economists, is too much currency circulation.

The concept of Inflation defined by economists as below:

- G. Ackley defined inflation as 'a persistent and appreciable rise in the general level or average of prices'. In other words, inflation is a state of rising prices, but not high prices.
- According to Coulborn inflation can be defined as "there is no change in supply of output when the supply of money increases".
- Professor C.Crowther defined "inflation is a state in which the value of money is falling, i.e. prices are rising."
- According to Dalton, "too much money chasing too few goods".
- Hawtrey defined "Inflation is the issue of too much currency."
- According to Milton Friedman "Inflation is always and everywhere a monetary phenomenon and can be produced only by a more rapid increase in the quantity of money than output."
- According to Prof. Kemmerer "inflation is too much currency in relation to the physical volume of business being done."
- J.M Keynes defines "Inflation is the rise in price level after the point of full employment is true inflation" According to him, inflation or price increases do not occur before conditions of full employment. Keynes believes that inflation should only be regarded as inflation, which increases after full employment. Prices can go up if currency supply increases, but as long as there are unemployed resources; the increase in prices cannot be considered inflation.

There is no universally accepted definition of inflation; it kept changing with the change in the perceptions of the economists. Some believed that inflation exists when the proportion of money income increases more than the increase in the earning activity. While others believe it is characterized by increased income chasing few goods due to the appreciable rise in their general price level.

5.2 Types of Inflation on the basis of Rate

Inflation is usually categorized on the basis of its rate and causes. I. Types of Inflation on the basis of rate: Based on the intensity of inflation, R.P Kent has classified inflation into four types as Creeping, Walking, Running and Galloping Inflation:

1. **Creeping Inflation:** When the rise in prices is very slow (less than 3% per annum) like that of a snail or creeper, it is called creeping inflation. Such an increase in prices is regarded as safe and essential for economic growth. This is because the moderate price increases make the economy feel natural. As a result, their demand for goods increases as consumers decide to buy goods at current prices instead of buying at increased prices in the future. Therefore, creeping inflation leads to economic expansion.
2. **Walking or Trotting Inflation:** When prices rise moderately and the annual inflation rate is a single digit (3% - 5%), it is called walking or trotting inflation. Inflation at this rate is a warning signal for the government to control it before it turns into running inflation. When there is a running inflation situation, the demand for goods increases as people buy more than they need to avoid higher prices in the future. Accordingly, the suppliers are unable to keep up with the goods and services are not available in sufficient quantity, so prices go up.
3. **Running Inflation:** When prices rise rapidly like the running of a horse at a rate of speed of 5% - 10% per annum, it is called running inflation. This is not good for the economy. If the government does not take appropriate action at this stage, it will lead to hyperinflation.
4. **Galloping or Hyperinflation:** When prices rise above 10% per annum, it is called galloping or hyperinflation. Such a situation brings a total collapse of the monetary system because of the continuous fall in the purchasing power of money. If the government does not announce adequate monetary and fiscal measures to reduce its severity, there is a risk of extreme fluctuations causing a financial crisis in the economy.

5.3 Demand-pull and cost-push Inflation

1. Demand-Pull Inflation: Demand pull inflation can be defined as a type of inflation that occurs when price level increases due to a greater demand for goods or services than there is supply available. In other words, Demand-pull inflation occurs when aggregate demand for goods or services outstrips aggregate supply. These constituents of the economy demand more goods than can be produced by the economy. When supply cannot rise to meet demand, sellers will increase prices, thereby causing inflation. Increases in the money supply will result in lower interest rates and increase investment. Increased investments will increase incomes of the people and demand for consumer and manufactured goods. Increasing demand in the economy can lead to demand-pull inflation. Imports also increase due to shortages of goods. Increases in wages, profits, government expenditure, unproductive cost deficit budgets, etc., can be attributed to demand-pull inflation. Demand-Pull inflation is illustrated in Figure 5.1. In the beginning the aggregate supply curve (AS) and the aggregate demand curves (AD1) are intersecting each other at point E1 and the price determined at P1. As a result of changes in the economy, the aggregate demand increases from AD1 to AD2 and then AD3. In the absence of changes in the aggregate supply curve (AS), it is parallel to the OY axis. The price of the commodity increases from P1 to P2 and then P3. This increase in price is called demand-pull inflation.

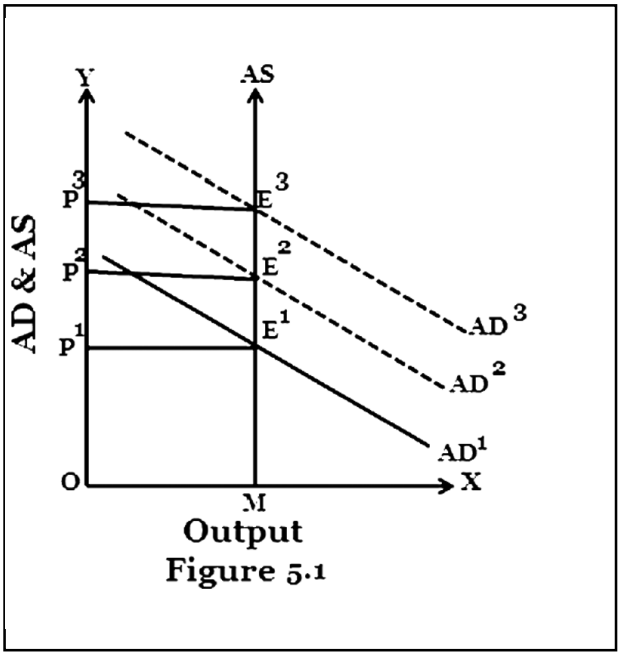

Figure 5.1

2. Cost-push inflation: Cost-push inflation is a type of inflation that occurs when higher production costs push up the prices of goods and services. The increased price of the factors of production leads to a decreased supply of these goods. While the demand remains constant, the prices of commodities increase causing a rise in the overall price level. This inflation is known as supply-induced inflation. The following are the reasons for cost-push inflation.

i. Increase of workers' wages: Cost-push inflation is caused by wage increases enforced by trade unions. Therefore this inflation is called wage-induced inflation.

ii. Profit Increase: All businessmen join together to increase prices of goods with the intent of increasing profits. Therefore this inflation is called profit-induced inflation.

iii. Increasing taxes on goods by the government: The government is spending huge amounts on welfare programs. To meet this type of expenditure government is imposing and increasing taxes on goods and services to get revenue is another cause for cost-push inflation. Cost-Push inflation is illustrated in Figure 5.2. AS1 is the aggregate supply line in the initial stage. The AS1 line has a positive slope when the economy does not reach full employment. After reaching full employment (YF), the AS1 supply line is perfectly inelastic (AS) and parallel to OY axis. The equilibrium point is E1 at this point both AD1 and AS1 intersect each other and the price is determined at OP1. When costs were increased, the supply line moved to the left (AS2). But there is no change in aggregate demand, now the equilibrium point is E2 and the price level increased and determined at OP2. At this stage the production decreased to OY2 level. As a result a decrease in production in the economy leads to unemployment. If costs increase further, the supply curve will shift to AS3, resulting in a higher price determined at OP3. Now the total production comes down to OY3. Therefore, the cost-push inflation drives the economy from a state of full employment to unemployment.

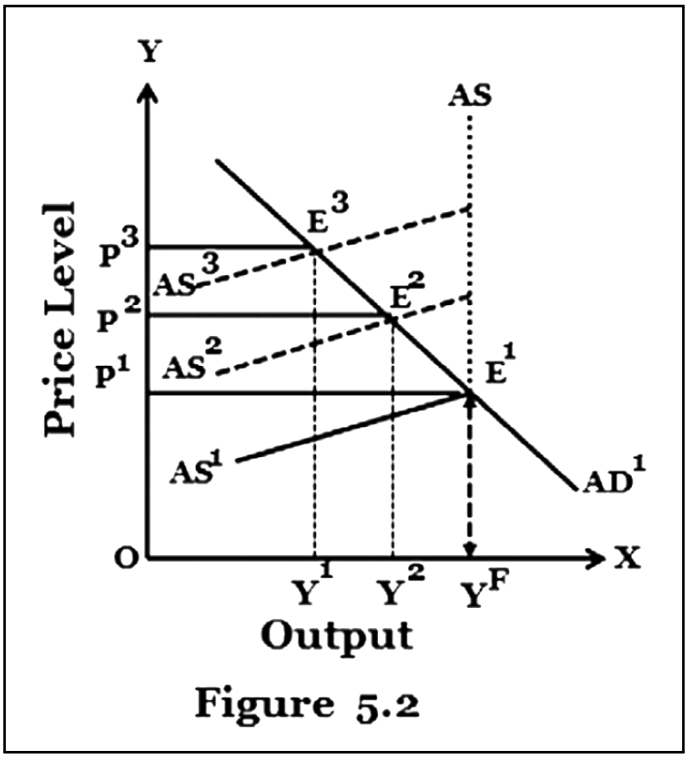

Figure 5.2

5.4 Causes of Inflation- Causes for excess demand Causes for shortage of supply

Causes of Inflation : Broadly speaking inflation arises when the aggregate demand exceeds the aggregate supply of goods and services. We analyse the factors which lead to increase in demand and the shortage of supply.

I. Factors Causing Increase in Demand: Both Keynesians and monetarists believe that inflation is caused by increase in the aggregate demand. Following are the factors which cause an increase in the size of demand.

1. Increase in Money Supply: Inflation is caused by an increase in the supply of money which leads to increase in aggregate demand. The higher the growth rate of nominal money supply, the higher is the rate of inflation. Increase in Disposable Income: When the disposable income of the people increases, it raises their demand for goods and services. Disposable income may increase with the rise in national income or reduction in taxes or reduction in the saving of the people.

2. **Increase in Public Expenditure:** In modern world government activities have been expanding which led to increased government expenditure. This raised the aggregate demand for goods and services, thereby causing inflation.

3. **Increase in Consumer Spending:** The demand for goods and services also increases when consumer spending increases due to conspicuous consumption or demonstration effect.

4. **Cheap Monetary Policy:** Cheap monetary policy or the policy of credit expansion also leads to increase in the money supply which raises the demand for goods and services in the economy thereby leading to inflation. This is also known as credit-induced inflation.

5. **Deficit Financing:** In order to meet its mounting expenses, the government resorts to deficit financing by borrowing from internal and external sources and even by printing more notes. This raises aggregate demand in relation to aggregate supply, thereby leading to inflationary rise in prices.

6. **Population Growth:** Population growth leads to an increase in aggregate demand for goods and services but shortage in aggregate supply will increase prices and inflation.

7. **Increase in Exports:** When the demand for domestically produced goods increases in foreign countries, this raises the earnings of industries producing export commodities. These, in turn, create more demand for goods and services within the economy. Apart from the above factors, expansion of the private sector, existence of black money and the repayment of public debt by the government also increase the aggregate demand for goods and services in the economy.

II. Factors Causing Shortage of Supply:

Following are the factors which result in a reduction in the supply of goods and services:

1. Shortage of factors of production: When there is shortage of factors of production like labour, capital, raw materials, etc. there is bound to be reduction in the production of goods and services.

2. Industrial Disputes: In countries where trade unions are powerful, they resort to strikes and lock-outs which result in a fall in industrial production thereby reducing the supply of goods.

3. Natural Calamities: Natural calamities like droughts, floods, etc. adversely affect the supplies of agricultural products. This creates shortage of food products and raw materials, thereby adding to inflationary pressures.

4. Artificial Scarcities: Artificial scarcities are created by hoarders and speculators who indulge in black marketing. Thus, they are instrumental in reducing supplies of goods and raising their prices.

5. Increase in Exports: When the country produces more goods for exports than for domestic consumption, this creates shortages of goods in the domestic market. This leads to inflation in the economy.

6. Lop-sided production: If the stress is on the production of comforts, luxuries, or basic products to the neglect of essential consumer goods in the country this creates shortages of consumer goods. This again causes inflation.

7. Law of Diminishing Returns: If industries in the country are using old machinery and outmoded methods of production, the law of diminishing returns operates. This raises cost per unit of production, thereby raising the prices of products.

8. International Factors: In modern times, inflation is a worldwide phenomenon.

III. Increase in cost of production of goods and services: An increase in the cost of goods production leads to inflation. The reasons for this:

1. Increase in prices of raw materials
2. Increase in prices of factors of production.
3. Increase in rates of indirect tax.
4. Increase in prices of capital goods.
5. Increase in prices of imported machinery and technology.
6. Depreciation of currency value.
7. Lack of resources.
8. Increase of capital machinery depreciation expense.
9. Increasing production costs.
10. Increasing resource wastage in production process.

5.5 Measurement of Inflation

There are several ways to measure inflation depending upon the types of goods and services. While measuring inflation, we take into account a large number of goods and services used by the people of a country and then calculate average increase in the prices of those goods and services over a period of time. A small rise in prices or a sudden rise in prices is not inflation since they may reflect the short term workings of the market.

Inflation Rate: The rate of change in a price index in a specified time is called the inflation rate. When building a price index, determine the base year and consider the index 100. If the current index value is equal to 100, it is called "zero inflation, less than 100 negative rate inflation, higher than 100 positive rate inflation.

$$\textbf{Inflation Rate} = \frac{\text{Current Month Price Index - Price Index for the Same month last year}}{\text{Price Index for the Same month last year}} \times 100$$

In India Consumer Price Index (CPI) and Wholesale Price Index (WPI) are two major indices for measuring of inflation. The Wholesale Price Index (WPI) was main index for measurement of inflation in India till April 2014, when RBI adopted new consumer price index (CPI) as the key measure of the inflation. The Wholesale Price Index (WPI) is computed by the Economic Adviser in Ministry of Commerce & Industry Government of India. It was earlier released on weekly basis for Primary Articles and Fuel Groups. However, since 2012, this practice has been discontinued. Currently WPI is released monthly.

Base year: Current WPI base year is 2011-12=100.

Items: There are total 697 items in WPI and inflation is computed taking 8331 price quotations. The items are divided into three broad categories. 1. Primary Articles 117 items, weightage is 22.62%. 2. Fuel and Power, 16 items weightage is 13.15%. 3. Manufactured products, 564 items, weightage is 64.23%.

1. Wholesale Price Index (WPI): Inflation is measured by calculating the changes occurred in WPI over a passage of time. The rate of inflation can be calculated by taking the percentage rate of change in the WPI for a given period of time.

$$\textbf{Inflation Rate} = \frac{\mathbf{WPI_t - WPI_{t-1}}}{\mathbf{WPI_{t-1}}} \times 100$$

The formula used for calculating inflation through WPI is as follows

Where, WPIt = current year Wholesale Price Index

WPI t-1 = Wholesale Price Index for the preceding year (t-1), (previous year)

The number of items in CPI basket include 448 in rural and 460 in urban. Thus it makes clear that CPI basket is broader than WPI basket. The items in CPI are categorised into 5 main groups: 1. Food and beverages, weightage is 54.18%, 2. Pan, tobacco and intoxicants, weightage is 3.26%, 3. Clothing and footwear, weightage is 7.36%, 4. Fuel and light, weightage is 7.94%, 5. Miscellaneous, weightage is 27.26%.

3. GNP Deflator: Apart from WPI, CPI, GNP deflator is also used for measuring the rate of inflation. GNP deflator is the measure of price levels of all the final goods and services produced in an economy in a specific period of time. The most comprehensive measure is GDP deflator, which is measured as a ratio of GNP at Current prices to GNP at constant prices. Since it encompasses the entire spectrum of economic activities including services, the scope and coverage of national income deflator is wider than any other measure. The data is released by the CSO but it is not used as it comes quarterly and with a two month lag. The formula used for the calculation of GNP deflator is as follows:

$$\text{GNP Deflator} = \frac{\text{Nominal GNP}}{\text{Real GNP}} \times 100$$

Where Nominal GNP = GNP at current prices

Real GNP = GNP at constant prices

The percentage change in GNP deflator of two consecutive

years provides the rate of inflation

5.6 Role of AI in forecasting Inflation

AI, particularly through machine learning (ML) and deep learning models, plays a growing role in forecasting inflation by processing vast, unconventional datasets and identifying complex, non-linear relationships that traditional economic models often miss. It offers more nuanced and potentially more accurate predictions, which is crucial for central banks and policymakers.

Overcoming Limitations of Traditional Models

Traditional inflation forecasting relies on econometric models like the Phillips Curve or Vector Autoregression (VAR). These models, however, have several limitations:

1) They are often linear, assuming a consistent relationship between variables, which may not hold during periods of economic volatility.

2) They rely on a limited set of structured macroeconomic data, such as GDP and unemployment rates.

3) They often struggle to predict sudden shifts or the persistence of inflation, as seen in recent years.

AI models, by contrast, can analyze a much wider range of data and are designed to handle complexity:

1) Big Data Analysis: AI can process "alternative" data sources that were previously too complex to analyze, such as web searches (e.g., Google Trends for "price increase"), satellite imagery of factory production, credit card transaction data, and sentiment from news articles or social media feeds. This allows for more real-time and granular insights into economic activity.

2) Non-Linear Relationships: ML algorithms can uncover non-linear dependencies between variables. For example, the impact of a wage increase on inflation might be different during a period of high unemployment than it is during a period of labor shortage. AI can identify these changing dynamics.

3) Nowcasting: AI models excel at "nowcasting," which is predicting current economic conditions before official data is released. By analyzing real-time data from various sources, AI can provide a more immediate snapshot of inflationary pressures.

The Role of Specific AI Techniques

Different AI techniques are being applied to inflation forecasting:

1) **Machine Learning (ML) Models:** Algorithms like Random Forests and Gradient Boosting can analyze large datasets and identify the most important variables driving inflation. These models often outperform traditional methods in terms of predictive accuracy.

2) **Deep Learning and Neural Networks:** These models can learn complex patterns from data without being explicitly programmed. A specific type, the Recurrent Neural Network (RNN), is well-suited for time-series data like inflation, as it can remember information from past data points.

3) **Large Language Models (LLMs):** Recent research from institutions like the Federal Reserve has explored using LLMs to forecast inflation. LLMs can analyze vast amounts of text from news articles, economic reports, and social media to gauge public and expert sentiment, which is a key driver of inflation expectations.

Impact on Policy and Decision - Making

More accurate inflation forecasts enable central banks and governments to make more informed and timely decisions.

Monetary Policy: A better understanding of future inflation allows central banks to adjust interest rates and other policy tools more precisely, helping to maintain price stability without causing unnecessary economic shocks.

1) **Risk Management:** Businesses can use AI-driven forecasts to adjust their pricing strategies, manage supply chains, and mitigate risks associated with rising costs.

2) **Investment Decisions:** Investors can use these insights to adjust their portfolios to protect against the erosion of purchasing power due to inflation.

   While AI provides powerful new tools, it's not a silver bullet. The "black box" nature of some AI models, where the reasoning behind their predictions isn't easily understood, remains a challenge. For this reason, AI is often used as a complement to traditional economic models and expert judgment, rather than a full replacement.

5.7 Effects of Inflation

The following points highlight the six major effects of inflation. The effects are: 1. Effects on Distribution of Income and Wealth 2. Effects on Production 3. Effects on Income and Employment 4. Effects on Business and Trade 5. Effects on the Government Finance 6. Effects on Growth.

I. Effects on Distribution of Income and Wealth: The impact of inflation is felt unevenly by the different groups of individuals within the national economy—some groups of people gain by making big fortune and some others lose.

i) Creditors and debtors: During inflation creditors lose because they receive in effect less in goods and services than if they had received the repayments during a period of low prices. Debtors, on the other hand, as a group gain during inflation, since they repay their debts in currency that has lost its value (i.e., the same currency unit will now buy fewer goods and services).

ii) Producers and workers: Producers gain because they get higher prices and thus more profits from the sale of their products. As the rise in prices is usually higher than the increase in costs, producers can earn more during inflation. But, workers lose as they find a fall in their real wages as their money wages do not usually rise proportionately with the increase in prices. However, the working class gains because they get more employment during inflation.

iii) Fixed income-earners: Fixed income-earners like the salaried people, rent-earners, landlords, pensioners, etc., suffer greatly because inflation reduces the value of their earnings.

iv) Investors: The investors in equity shares gain as they get dividends at higher rates because of larger corporate profits and as they find the value of their shareholdings appreciated. But the bondholders lose as they get a fixed interest the real value of which has already fallen.

v) Traders, speculators, businesspeople and black-marketers: They gain because they make more profits from the persistent rise in prices.

vi) Farmers: Farmers also gain because the rise in the prices of agricultural products is usually higher than the increase in the prices of other goods. Thus, inflation brings a shift in the pattern of distribution of income and wealth in the country, usually making the rich richer and the poor poorer. Thus during inflation there is more and more inequality in the distribution of income.

II. Effects on Production: The rising prices stimulate the production of all goods both

of consumption and of capital goods. As producers get more and more profit, they try to produce more and more by utilising all the available resources at their disposal. But, after the stage of full employment the production cannot increase as all the resources are fully employed. Moreover, the producers and the farmers would increase their stock in the expectation of a further rise in prices. As a result hoarding and cornering of commodities will increase. But such favourable effects of inflation upon production are not always found. Sometimes, production may come to a standstill position despite rising prices, as was found in recent years in developing countries like India, Thailand and Bangladesh. This situation is described as stagflation.

III. Effects on Income and Employment: Inflation tends to increase the aggregate money income (i.e., National Income) of the community as a whole on account of larger spending and greater production. Similarly, the volume of employment increases under the impact of increased production. But the real income of the people fails to increase proportionately due to a fall in the purchasing power of money.

IV. Effects on Business and Trade: The aggregate volume of internal trade tends to increase during inflation due to higher incomes, greater production and larger spending. But the export trade is likely to suffer on account of a rise in the prices of domestic goods. However, the business firms expand their businesses to make larger profits. During the period of inflation since costs do not rise as fast as prices profits soar. But wages do not increase proportionately with prices, causing hardships to workers and making more and more inequality. As the old saying goes, during inflation prices move by escalator and wages by stairs.

V. Effects on the Government Finance: During inflation, the government revenue increases as it gets more revenue from income tax, sales tax, excise duties, etc. Similarly, public expenditure increases as the government is required to spend more and more for administrative and other purposes. But the rising prices reduce the real burden of public debt because a fixed sum has to be paid in instalment per period.

VI. Effects on Growth: A mild inflation promotes economic growth, but a runaway inflation obstructs economic growth as it raises cost of development projects. Although a mild dose of inflation is inevitable and desirable in a developing economy, a high rate of inflation tends to lower the growth rate by slowing down the rate of capital formation and creating uncertainty.

But inflation, especially a runaway inflation, is an unstable situation. It makes the business world uneasy and uncertain. Society gets disturbed as there grows discontentment among the salaried people and they demand an increase in their wages and salaries.

5.8. Measures to Control Inflation

Monetarists and classicists blame an increase in money supply that results in an increase in aggregate demand. Keynesians, on the other hand, do not attach any importance to the monetary factors. To them, inflation is caused, of course, by an increase in aggregate demand. Basically, these two arguments for inflation lead to demand management policies. Demand management policies may be broadly grouped into (i) monetary policy, and (ii) fiscal policy. However, inflation is also caused by cost-push factors. Often prices and incomes policy are suggested to control this type of inflation. In fact, inflation in an economy is a mixture of demand-pull and cost-push factors. Thus, for controlling inflation, policymakers employ three methods:

(I) Monetary measures; (II) Fiscal measures; and (III) Non-monetary measures. I. Monetary Measures: Monetary policy is the policy employed by the central bank to alter the cost of credit, demand for credit and the availability of credit. It is also known as the credit control policy. A central bank has the following instruments of credit control at its disposal to influence the demand, cost and availability of credit or the country's money supply:

1. Bank rate.
2. Open market operations.
3. Cash reserve ratio (CRR).
4. Selective methods of credit control.

The stabilisation policy of the central bank requires a 'dear money policy' with the intention of reducing aggregate demand. In order to fight inflation, the central bank increases bank rate, conducts open market sale of bonds and securities, increases the minimum cash reserve ratio. All these measures make bank credit more costly. Higher cost of credit makes less availability of credit and, hence, less money supply. These have the potentiality of contracting aggregate demand. Since all these measures reduce the credit-creating potentiality of commercial banks, aggregate private spending gets reduced and inflation is thereby controlled.

Finally, central bank employs selective credit control when any particular sector(s) rather than the entire economy experience inflationary price rise. However, this instrument is effective mainly in controlling consumption spending. However, there are some limitations of the monetary policy that restrict its effectiveness. First, monetary policy affects aggregate demand only indirectly, i.e., by raising interest rate and reducing money supply. Thus, its efficacy can only be felt after a time lag. Secondly, not all types of aggregate spending are influenced by monetary control weapons.

II. Fiscal Measures: Fiscal policy measures comprise the policy of the government relating to taxation, expenditure and borrowing. These three elements of fiscal policy influence aggregate spending. We know that the bulk of aggregate spending is derived from

government spending. During inflation, government spending may be reduced. However, due to some political reasons or economic compulsion, cut in public spending may be difficult. However, unproductive public expenditure must be controlled. Often, modern governments have the tendency to spend more to please the voters without bothering about the impact of inflation that may fall upon the society badly. In fact, control of expenditure is one of the important solutions to inflation.

When a country is exposed to inflation, the government may raise both direct and indirect taxes to wipe out excess aggregate spending. Once a tax on income and wealth is imposed, disposable income gets reduced. This will greatly reduce private aggregate spending. However, in reality, a government may be reluctant to raise the rates of taxes since taxpayers may vote out a government from power. In order to mop up excess purchasing power at the time of inflation, the government may resort to borrowing from the public by selling government bonds. Fiscal policy, like monetary policy, is not faultless. It is exposed to certain limitations. First, the fiscal policy and politics go hand in hand in the sense that fiscal policy is never taken in a political vacuum. Political compulsions greatly reduce its effectiveness. Secondly, injudicious use of tax-expenditure programme may not yield desired results.

III. Other (Direct) Measures: Increase the production of essential commodities, price control, rationing, rational wages and compulsory savings can curb inflation.

1. **Increase in the production of essential goods:** All possible help in the form of latest technology, raw materials, financial help, subsidies, etc. should be provided to different consumer goods sectors to increase production. The government should encourage the production of essential consumer goods like food, clothing, kerosene oil, sugar, vegetable oils, etc.
2. **Rational Wage Policy:** Another important measure is to adopt a rational wage policy. The best course for this is to link increase in wages to increase in productivity. This will have a dual effect. It will control wages and at the same time increase production of goods in the economy.
3. **Price Control:** Price control and rationing is another measure of direct control to check inflation. Price control means fixing an upper limit for the prices of essential consumer goods.
4. **Rationing:** Rationing aims at distributing consumption of scarce goods so as to make them available to a large number of consumers. It is applied to essential consumer goods such as wheat, rice, sugar, kerosene oil, etc. It is meant to stabilize the prices of necessaries and assure distributive justice.
5. **Compulsory saving:** Introducing a compulsory saving scheme for employees helps to reduce their spending and prevent prices from rising. From the various monetary, fiscal and other measures, discussed above, it becomes clear that to control inflation, the government should adopt all measures simultaneously.

5.9 Concepts of Phillips Curve

The Phillips curve originated out of analysis comparing money wage growth with unemployment. The findings of A.W. Phillips in the Relationship between Unemployment and the Rate of Change of Money Wages in the United Kingdom 1861–1957 suggested there exists an inverse relationship between the rate of unemployment and the rate of increase in nominal wages. He published his theory in 1958. A lower rate of unemployment is associated with higher wage rate or inflation, and vice versa. In other words, there is a tradeoff between wage inflation and unemployment.

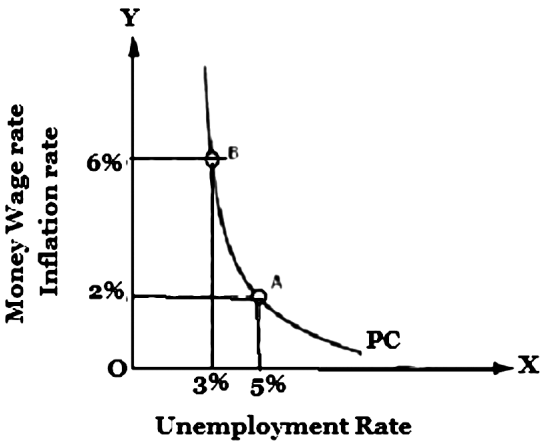

Figure 5.4

This analysis was later extended to look at the relationship between inflation and unemployment. Again the 1950s and 1960s showed there was evidence of this inverse trade-off between unemployment and inflation.

The Phillips curve gained an important role in explaining inflationary conditions in the economy. According to Phillips curve analysis an economy must have a high percentage of unemployment, if it is to achieve price stability without inflation. In figure 5.4 we showed the unemployment rate on the OX axis and the money wage rate on OY axis. The Phillips curve (PC) slopes downward, from left to right (negative). This means there is an inverse relationship between the rate of change in money wages and the rate of unemployment. Phillips stated some of his observations as follows.

1. The relationship between unemployment to the rate of money wages is negative.
2. When the unemployment level is 5%, the change in the money wage level is 2%.
3. When the unemployment level is 3%, the change in the money wage level is 6%.
4. An increase in the money wage level will lead to rise in prices and inflation.
5. According to Phillips curve analysis an economy must have a high percentage of unemployment, if it is to achieve price stability without inflation.

The Phillips curve constructed based on data collected by Phillips in England, is not suited to the U.S economy. In the real world, every increase in money wage will not lead to inflation. Moreover increase in money wages will increase labor productivity and output. Despite high unemployment rates, many economies in the world are facing inflationary problems. Therefore, we can see, both unemployment and inflation rates remain high in many countries.

5.10 Deflation and Stagflation

Deflation : Deflation is the opposite of inflation. Deflation refers to a situation, where there is a decline in general price levels. Thus, deflation occurs when the inflation rate falls below 0% (or it is negative inflation rate). Deflation increases the real value of money and allows one to buy more goods with the same amount of money over time. Deflation can occur owing to reduction in the supply of money or credit. Deflation can also occur due to direct contractions in spending, either in the form of a reduction in government spending, personal spending or investment spending. Deflation has often had the side effect of increasing unemployment in an economy, since the process often leads to a lower level of demand in the economy.

Deflation causes the nominal costs of capital, labour, goods, and services to fall, though their relative prices may be unchanged. Deflation has been a popular concern among economists for decades. On its face, deflation benefits consumers because they can purchase more goods and services with the same nominal income over time.

However, not everyone wins from lower prices and economists are often concerned about the consequences of falling prices on various sectors of the economy, especially in financial matters. In particular, deflation can harm borrowers, who can be bound to pay their debts in money that is worth more than the money they borrowed, as well as any financial market participants who invest or speculate on the prospect of rising prices. A decline in aggregate demand typically results in subsequent lower prices. Causes of this shift include reduced government spending, stock market failure, consumer desire to increase savings, and tightening monetary policies. Falling prices can also happen naturally when the output of the economy grows faster than the supply of circulating money and credit. This occurs especially when technology advances the productivity of an economy, and is often concentrated in goods and industries which benefit from technological improvements. Companies operate more efficiently as technology advances. These operational improvements lead to lower production costs and cost savings transferred to consumers in the form of lower prices.

Stagflation : Stagflation is a condition of slow economic growth and relatively high unemployment, or economic stagnation, accompanied by rising prices, or inflation. It can also be defined as inflation and a decline in gross domestic product. Stagflation refers to economic condition where economic growth is very slow or stagnant and prices are rising. The term stagflation was coined by British politician Iain Macleod, who used the phrase in his speech to parliament in 1965, when he said: “We now have the worst of both worlds - not just inflation on the one side or stagnation on the other. We have a sort of ‘stagflation’ situation.” The side effects of stagflation are increase in unemployment- accompanied by a rise in prices, or inflation. It was later used again to describe the recessionary period during the 1970s following the oil crisis, when the U.S. underwent a recession that saw five quarters of negative GDP growth. Inflation doubled in 1973 and hit double digits in 1974; unemployment hit 9 percent by May 1975.

Stagflation led to the emergence of the Misery index. This index, which is the simple sum of inflation rate and unemployment rate, served as a tool to show just how badly people were feeling when stagflation hit the economy.

5.11 Concept & Phases of Business Cycle

Trade cycles are part of free market (capitalist) economies. These denote the phenomenon of fluctuations over a period of time in an economy. Many free market economies have registered rapid economic growth during the last two centuries. But economic growth of free market economies has not followed a steady and smooth upward trend. There has been a long-run upward trend in Gross National Product (GNP), but periodically there have been large short-run fluctuations in economic activity i.e., changes in output, income, employment and prices around this long- term trend. Thus, the gradual fluctuations in the economic activity of a country are called trade cycles. These systematic fluctuations occur with each other and create uncertainty in the economy. Similarly, they struck global economies by moving from one economy to another.

The period of high income, output and employment has been called the period of expansion, upswing or prosperity, and the period of low income, output and employment has been described as contraction, recession, downswing or depression. The economic history of the free market capitalist countries has shown that the period of economic prosperity or expansion alternates with the period of contraction or recession. These alternating periods of expansion and contraction in economic activity have been called Trade Cycles. They are also known as Business cycles.

Phases of Business Cycles

The different phases that an economy goes through over time, such as periods of booms (expansions) and economic recessions (contractions), is known as the business cycle or the trade cycle. One entire business cycle is the completion of an expansion and a contraction sequentially. The line through the business cycle is known as the trend line. The trend line shows that the economy is always moving upwards or growing in the long run. A full trade cycle has got four phases: 1) Recovery (2) Prosperity (3) Recession (4) Depression.

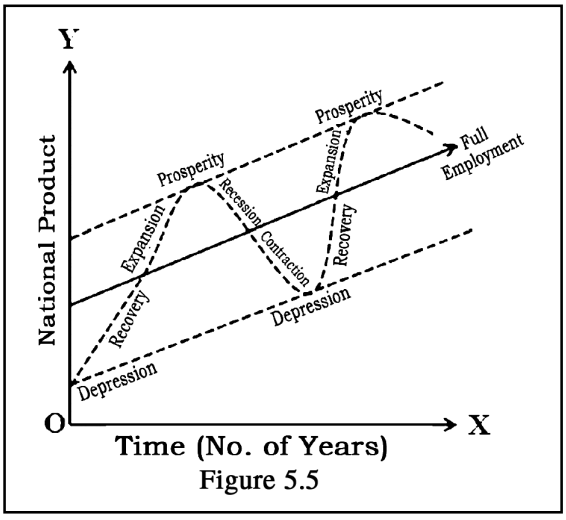

Figure 5.5

The phases of trade cycle are explained in figure 5.5. The business cycle starts from a trough (lower point) and passes through a recovery phase followed by a period of expansion (upper turning point) and prosperity. After the peak point is reached there is a declining phase of recession followed by a depression. Again the business cycle continues similarly with ups and downs.

1. **Recovery:** The turning point from depression to expansion is termed as Recovery or Revival Phase. During the period of revival or recovery, there are expansions and rise in economic activities. When demand starts rising, production increases and this causes an increase in investment. There is a steady rise in output, income, employment, prices and profits. The businessmen gain confidence and become optimistic. This increases investments.

   The stimulation of investment brings about the revival or recovery of the economy. Employment increases purchasing power and this leads to an increase in demand for consumer goods. As a result, demand for goods will press upon their supply and it shall, thereby, lead to a rise in prices. The demand for consumer goods shall encourage the demand for producer goods. Revival slowly emerges into prosperity.

2. **Prosperity:** When there is an expansion of output, income, employment, prices and profits, there is also a rise in the standard of living. This period is termed as Prosperity phase. Due to full employment of resources, the level of production is Maximum and there is a rise in GNP. Due to a high level of economic activity, it causes a rise in prices and profits. There is an upswing in the economic activity and economy reaches its Peak. This is also called a Boom Period.

3. **Recession Phase:** The turning point from prosperity to depression is termed as Recession Phase. During a recession period, the economic activities slow down. When demand starts falling, the overproduction and future investment plans are also given up. There is a steady decline in the output, income, employment, prices and profits. The businessmen lose confidence and become pessimistic (Negative). It reduces investment. The increase in unemployment causes a sharp decline in income and aggregate demand.

4. **Depression:** When there is a continuous decrease of output, income, employment, prices and profits, there is a fall in the standard of living and depression sets in. In depression, there is under-utilization of resources and fall in GNP. The aggregate economic activity is at the lowest, causing a decline in prices and profits until the economy reaches its Trough.

5.12 Fluctuations in Digital Markets

Fluctuations in digital markets, particularly in sectors like cryptocurrencies, are driven by a unique combination of factors that make them significantly more volatile than traditional markets. These fluctuations can impact the broader economy by affecting investor behavior and potentially challenging financial stability.

Causes of Fluctuations

The primary causes of volatility in digital markets are distinct from those in conventional markets:

1) **Supply and Demand Dynamics:** Many digital assets, like Bitcoin, have a finite supply or a predetermined issuance schedule. This scarcity means that even a small increase in demand can lead to large price swings. Conversely, large sales by significant holders, known as "crypto whales," can cause prices to plummet.

2) **Market Immaturity:** Digital markets are still young and less liquid than traditional stock or bond markets. This low liquidity makes them more susceptible to large price movements from relatively small trades, as there are not enough buyers or sellers to absorb the shock. The market is also heavily retail-driven, with less institutional investment to provide stability.

3) **Sentiment and Media Coverage:** Due to their decentralized and community-driven nature, digital markets are highly influenced by market sentiment. News, social media trends, celebrity endorsements, and even rumors can trigger a "herd mentality," leading to rapid rallies or panic selling. This behavior is amplified by the 24/7 nature of digital asset trading.

4) **Regulatory Uncertainty:** The lack of a clear, global regulatory framework for digital assets is a major source of volatility. Announcements of new regulations, restrictions, or outright bans in a country can lead to sharp price drops, while positive regulatory news can cause prices to soar.

5) **Technological Developments:** Fluctuations are also tied to the technology itself. Major network upgrades, new project announcements, or security breaches (hacks) can significantly affect investor confidence and the price of an asset.

Impact on Economic Stability

The volatility of digital markets can have several impacts on the broader economy and financial stability:

1) **Investor Behavior:** The high-risk nature of digital assets can amplify psychological biases in investors, such as loss aversion and herd behavior, which can then spill over into traditional asset markets. The rapid wealth creation or destruction in these markets can affect consumer spending and confidence.
2) **"Digitalization of Economies":** While digital transformation can foster economic growth and create jobs, its rapid, unregulated pace can also introduce new risks. The interconnectedness of digital finance with the traditional financial system means that a major crisis in a digital market could, in a worst-case scenario, create contagion and lead to broader economic instability.
3) **Market Efficiency and Price Discovery:** The extreme fluctuations in digital markets can make them less efficient. The constant price discovery phase, driven by speculation rather than fundamentals, means that prices may not accurately reflect the underlying value or utility of a digital asset.
4) **Cybersecurity and Financial Crime:** The decentralized and often pseudonymous nature of digital assets, while offering certain benefits, also makes them a target for illicit activities. Scams, fraud, and cyberattacks can erode trust in these markets and pose a risk to financial security.

5.13 Role of AI & Big Data in Predicting Recessions

AI and Big Data enhance recession forecasting by moving beyond traditional, limited economic models to analyze vast, diverse, and often unstructured datasets. This allows for more real-time and nuanced predictions of economic downturns.

The Role of Big Data: Big Data provides the fuel for AI models. It encompasses a massive volume of information from a wide variety of sources, which is often updated in real time. Unlike traditional economic data (e.g., quarterly GDP and monthly unemployment figures), Big Data can offer a more immediate and comprehensive view of the economy. Key sources include:

1) **Financial Transaction Data:** Real-time credit card and debit card data can show immediate changes in consumer spending, a crucial leading indicator of economic health.
2) **Satellite Imagery:** AI can analyze images of parking lots at retail stores or shipping containers at ports to gauge commercial activity.
3) **Social Media and News Sentiment:** Natural Language Processing (NLP) models can scan news headlines and social media feeds to measure consumer and business confidence, providing a qualitative leading indicator of economic sentiment.
4) **Supply Chain and Shipping Data:** Tracking data from shipping and logistics companies can signal shifts in global trade and production long before official reports are released.

By incorporating these high-frequency, unconventional data sources, Big Data enables economists to perform nowcasting-predicting current economic conditions in real time-rather than simply forecasting future trends based on historical data.

The Role of AI and Machine Learning

AI and Machine Learning (ML) are the analytical engines that process Big Data to predict recessions. While traditional econometric models rely on pre-defined, linear relationships between a few variables, AI can identify complex, non-linear patterns that human analysts and simpler models would miss.

1) **Predictive Analytics:** ML algorithms like Random Forests, Gradient Boosting, and Neural Networks can be trained on vast historical and real-time datasets. These models can weigh a multitude of indicators simultaneously to produce a probability of a recession. They are particularly effective at identifying subtle anomalies that may precede an economic downturn.

2) **Early Warning Systems:** AI can create automated, real-time early warning systems that monitor a wide array of indicators. If a combination of factors-such as a specific decline in consumer sentiment, a drop in shipping activity, and a rise in unemployment claims-reaches a certain threshold, the system can alert policymakers and financial institutions.

3) **"Black Swan" Events:** While AI learns from historical data and may struggle to predict truly unprecedented events (like a pandemic), it can still be valuable by providing a more resilient and dynamic analysis of the economic aftermath, helping policymakers gauge the depth and duration of a downturn.

The synergy between Big Data and AI offers a more accurate, real-time, and granular approach to economic forecasting. This allows for more timely and targeted policy interventions, which can potentially mitigate the severity and duration of a recession.

Short Type Questions :

1. Deflation
2. Stagflation
3. Phillips Curve
4. Demand Pull Inflation
5. Cost Push Inflation
6. Creeping Inflation

Essay Type Questions :

1. Explain the Role of AI in forecasting Inflation
2. Describe the Fluctuations in Digital Markets
3. Describe the Role of AI & Big Data in predicting recessions
4. Discuss Types of Inflation on the basis of Rate
5. Distinguish Between Demand pull inflation and cost push inflation
6. What are the causes for inflation in India? Suggest measures to control inflation
7. Explain the effects of Inflation in the Economy
8. Explain briefly the different phases of trade cycles

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ఆహా.. అక్కెనపల్లి మీనయ్య



పోటీ పరీక్షలకు సిద్ధమవుతున్న వారికి పుస్తకాలు అందజేస్తూ..

నీలగిరి, న్యూస్‌టుడే: 'చిన్నప్పుడు ఉపాధ్యాయుడు కొట్టారని బడి మానేస్తే.. అనంతరములు అనే సారు నేను కొట్టను అని వచ్చి బడికి తీసుకెళ్లారు.. తోటి వారితో పోటీ పడినప్పుడు తెలిసింది చదువు విలువ.. ఎంత కష్టం వచ్చినా చదువు ఆపలేదు.. ఎంఏ ఎకనామిక్స్ పూర్తి చేసి ఉపాధి కోసం కండక్టర్ ఉద్యోగంలో చేరాను.. కానీ ఉపాధ్యాయుడు కావాలనే కోరికతో జూనియర్ అధ్యాపకునిగా చేరా. . ఉద్యోగంలో విశ్రాంతి పొందినా విద్యార్థులకు బోధన ఆపకూడదని ఆన్‌లైన్‌లో శిక్షణ ఇస్తున్నాను..'.. అని చెబుతున్నారు అక్కెనపల్లి మీనయ్య. ఆయన్ను ఆదర్శ అధ్యాపకుడని శిష్యులు ముద్దుగా పిలుచుకుంటారు. ఈయన వద్ద ఎకనామిక్స్‌లో మెలకువలు తెలుసుకుని దేశంలోని వివిధ విశ్వవిద్యాలయాలు, విద్యాసంస్థలలో ఎకనామిక్స్ బోధకులుగా 830 మంది ఉన్నారు. వేలాది మంది ప్రభుత్వ ఉద్యోగాల్లో స్థిరపడ్డారు.

ప్రస్థానం ఇలా ...

మీనయ్యది నార్కట్‌పల్లి మండలం గోపాలయిపల్లి గ్రామం. విద్యాభ్యాసం అంతా ప్రభుత్వ విద్యాసంస్థల్లోనే సాగింది. ఇంటర్, డిగ్రీ, ఎంఏ ఎకనామిక్స్ నల్గొండలో పూర్తి చేశారు. పేద కుటుంబం కావడంతో ఉపాధి కోసం కండక్టర్ ఉద్యోగంలో చేరారు. ఉపాధ్యాయ వృత్తిపై ఉన్న మమకారంతో 1982లో జూనియర్ లెక్చరర్‌గా బాన్సువాడలో చేరారు. నాటి నుంచి ఆయన విద్యార్థుల కోసం అనేక ప్రయోగాలు చేస్తూ ఎకనామిక్స్‌లో అనేక మెలకువలు తెలియజేస్తూ బోధించేవారు. ఆయన ఇంటర్, డిగ్రీ చదువుకున్న బాలుర జూనియర్ కళాశాలలోనే జూనియర్ అధ్యాపకునిగా, ఎన్జీ కళాశాలలో డిగ్రీ అధ్యాపకునిగా పనిచేశారు. పరీక్షల్లో విజయం సాధించేందుకు అనేక పుస్తకాలు రూపొందించారు. నేటికి మీనయ్య తయారు చేసిన సిలబస్‌ను ఇంటర్, డిగ్రీ, పీజీలో విద్యార్థులకు బోధిస్తున్నారు.

మిత్రులతో కలిసి ఫోరం ఏర్పాటు

ఎకనామిక్స్ అధ్యాపక మిత్రులతో కలిసి 2004లో ఎకనామిక్స్ ఫోరం ఏర్పాటు చేశారు. సీపీఎం నాయకుడు మల్లు వెంకటనర్సింహారెడ్డి జ్ఞాపకార్థం ఏర్పాటు చేసిన ఎంవీఎన్ ట్రస్టు ద్వారా నిరుద్యోగులకు శిక్షణ ఇచ్చారు. కరోనా తర్వాత ఆఫ్‌లైన్ క్లాస్‌లు నిర్వహించడానికి ఇబ్బందిగా మారడంతో ఆన్‌లైన్ క్లాసులు ఏర్పాటు చేశారు.



శాశ్వత కార్యక్రమంగా ఉండాలని... మీనయ్య



పేద విద్యార్థులు వృద్ధిలోకి రావాలని అనుకున్నా. ఎంవీఎన్ ట్రస్టు సహకారంతో ఎకనామిక్స్ పీజీలో సీటు కోసం ప్రత్యేక శిక్షణ ఇచ్చే వాళ్లం. వీరితో పాటు నిరుద్యోగులకు ఆన్‌లైన్‌లో ఫోరం ద్వారా శిక్షణ ఇస్తున్నాం. ఫోరంలో శాశ్వత సభ్యులను చేర్పించి ఫండ్ ఏర్పాటు చేసి నిరంతరం ఈ కార్యక్రమం కొనసాగాలని ఆలోచిస్తున్నాం. విద్యార్థులు ఎక్కడి వచ్చినా బోధిస్తాం. 2012లో ఉద్యోగ విరమణ పొందాను. అయినా పాఠాలు చెప్పడం ఆపలేదు. ఆర్థిక పరిస్థితి బాగాలేక ఉద్యోగం సాధించలేకపోయాను అనే బాధ నిరుద్యోగులకు రాకుండా చేయాలనే లక్ష్యంతో ముందుకు సాగుతున్నాం.

ఎంవీఎన్ విజ్ఞాన కేంద్రం స్టూడెంట్స్ విజయకేతనం

• 41 జూనియర్ లెక్చరర్స్ పోస్టులు కైవసం



నవతెలంగాణ -క్లాక్‌టవర్

ఈ నెల 25న ప్రకటించిన టీజీపీఎస్‌సీ ఎకనామిక్స్ జూనియర్ లెక్చరర్స్ ఫలితాల్లో నల్లగొండ జిల్లా కేంద్రంలోని ఎంవీఎన్ విజ్ఞాన కేంద్రం స్టూడెంట్స్ విజయకేతనం ఎగురవేశారు. మొత్తం 80 పోస్టులకుగాను ఎంవీఎన్ విజ్ఞాన కేంద్రం నేతృత్వంలో పనిచేస్తున్న 'ఎకనామిక్స్ ఫోరమ్' 41 పోస్టులు కైవసం చేసుకోవడం అభినందనీయమని ఫోరమ్ అధ్యక్షులు డా.అక్కెనపల్లి మీనయ్య మంగళవారం ఒక ప్రకటనలో తెలిపారు. దాదాపు 10 నెలలుపాటు రాష్ట్ర వ్యాప్తంగా ఆన్‌లైన్‌లో ప్రతిరోజూ 3 గంటలపాటు సాగిన విద్యార్థులు, ఫోరమ్ ఉపన్యాసకుల నిరంతర కృషి వల్ల ఈ అద్భుత ఫలితాలు సాధ్యమయ్యాయని పేర్కొన్నారు. క్రమబద్ధంగా క్లాసులు, వాటికి అనుగుణంగా సీబీటీ పరీక్షలు నిర్వహించడం విజయానికి దోహదం చేసిందన్నారు. గురుకుల జూనియర్ లెక్చరర్స్, డిగ్రీ ఉపన్యాసకుల ఫలితాల్లోనూ 12 మంది జూనియర్ లెక్చరర్స్, 10 మంది డిగ్రీ లెక్చరర్స్‌గా ఉద్యోగాలు పొంది మొత్తం 63 మంది నల్లగొండ ఎకనామిక్స్ ఫోరమ్ ద్వారా ఎంపికయ్యారని తెలిపారు. ఫోరమ్ విద్యార్థులు అధిక సంఖ్యలో ఎంపిక కావడం పట్ల ఫోరమ్ అసోసియేట్ అధ్యక్షులు త్రిపురం భాస్కర్ రెడ్డి, సెక్రెటరీ షేక్ సుల్తానా, మహాత్మా గాంధీ యూనివర్సిటీ అంజిరెడ్డి, ఫాకల్టీ మెంబెర్స్ కృష్ణవేణి, సరస్వతి, వెంకటేశం, ఫోరమ్ కార్యక్రమాలను ప్రోత్సహిస్తూ అండగా ఉంటున్న ప్రొఫెసర్ ఇంద్రకాంత్ హర్షం వ్యక్తం చేశారు. ఉద్యోగాలు పొందిన వారికి ఎంవీఎన్ విజ్ఞాన కేంద్రం ట్రస్టు భాధ్యులు జూలకంటి రంగారెడ్డి, నంద్యాల నర్సింహారెడ్డి, సుధాకర్‌రెడ్డి, పుచ్చకాయల నర్సిరెడ్డి అభినందనలు తెలిపారు.

పేద విద్యార్థుల ఆశాజ్యోతి 'ఎంవీఎన్' విజ్ఞానకేంద్రం

- పోటీ పరీక్షలకు అత్యుత్తమ శిక్షణ
- అందుబాటులోకి మెటీరియల్, బుక్స్
- ఉచిత భోజన సదుపాయం
- సకల సేవలకు కేరాఫ్‌గా ఎంవీఎన్ విజ్ఞానకేంద్రం

నవతెలంగాణ-నల్లగొండ బ్యూరో
కంప్యూటర్ శిక్షణతో మొదలు..

మల్లు వెంకట నరసింహారెడ్డి పేరుతో విజ్ఞాన కేంద్రం ఏర్పాటయింది. మొదటిసారిగా 2011 డిసెంబర్ 5న ఆప్పటి జిల్లా కలెక్టర్ ముక్తేశ్వరరావు కంప్యూటర్ ఇన్‌స్టిట్యూట్ ను ఈ విజ్ఞాన కేంద్రంలో ప్రారంభించారు. నాటి నుండి నేటి వరకు సుమారు 18 వేల మందికి పైగా విద్యార్థులకు కంప్యూటర్ కోర్సులో శిక్షణను అందించారు. ఎంవీఎన్ సంస్థ సభ్యులుగా ఉన్న నందాల నరసింహారెడ్డి, జూలకంటి రంగారెడ్డి, ముదిరెడ్డి సుధాకర్ రెడ్డి, మల్లు సుధాజ్యం తదితర దాతల సహకారంతో సంస్థ నిర్వహణ కొనసాగుతోంది. దీనికి కన్వీనర్ గా ఎన్ని కాలేజీలో 2012వ సంవత్సరం మార్చి లో ఉద్యోగ విరమణ పొందిన డాక్టర్ అక్కినపల్లి మీనయ్య వ్యవహరిస్తున్నారు. కార్యనిర్వాహన కార్యదర్శిగా పీ. నర్సిరెడ్డి , గ్రంథాలయ ఇన్చార్జ్ గా పి. యాదగిరి, కే. నర్సయ్య, కంప్యూటర్ ఇన్స్టిట్యూట్ నిర్వాహకులుగా పీ.శంకర్ కారటే శిక్షకులు కల్పూరి నాగేష్ లు సమన్వయంగా పనిచేస్తూ ఈ కేంద్రాన్ని ముందుకు తీసుకు వెళ్తు ఎందరో జీవితాలలో వెలుగులు నింపుతున్నారు. విజ్ఞాన కేంద్రం స్థాపించిన కొద్ది రోజుల్లోనే ప్రత్యేక గ్రంథాలయం, రీడింగ్ రూమ్, క్లాస్ రూమ్స్ అందుకు అనుగుణంగా కుర్చీలు, టేబుల్స్ విజ్ఞాన కేంద్రం సమకూర్చింది. 2013 సంవత్సరంలో గ్రూప్ 2, 3, 4 అదేవిధంగా వీఆర్వో వీఆర్ఏ, పోలీస్, ఎక్సైజ్ కానిస్టేబుల్ పోస్ట్ లకు ఈ కేంద్రం శిక్షణా తరగతులు నిర్వహించింది. 1200 మంది పైగా విద్యార్థులతో నిత్యం విజ్ఞాన కేంద్రం అంకితభావం, క్రమశిక్షణతో మంచి ఫలితాలను సాధించి ఉద్యోగాలను పొందారు.

ప్రత్యేక గ్రంథాలయం..

2014 జూలై 14 గ్రంథాలయాన్ని ప్రారంభించారు. విద్యార్థులకు అవసరమయ్యే పుస్తకాలన్నీ ఇక్కడ లభిస్తాయి. పోటీ పరీక్షలకు సంబంధించి ఎప్పటికప్పుడు మార్కెట్లో విడుదలైన పుస్తకాలని అందుబాటులో ఉంచుతున్నారు. నిత్యం 15 పత్రికలు వస్తున్నాయి. దినపత్రికలలో వచ్చిన బిట్స్ సేవర్స్ను బుక్లెట్స్ గా మార్చి విద్యార్థులకు అందుబాటులోకి తీసుకువస్తున్నారు. విద్యార్థులకు ఉచిత పుస్తకాలను అందజేస్తున్నారు. ప్రస్తుత అదనపు కలెక్టర్ భాస్కరరావు చేతుల మీదుగా ఉచిత పుస్తకాలను పంపిణీ చేశారు. ఉదయం 8 గంటల నుండి రాత్రి 9 వరకు శిక్షణ కొనసాగుతుంది. గ్రూప్ 2 గ్రూప్ 3 గ్రూప్ 4, వీఆర్వో, ఎస్సై,కానిస్టేబుల్, పంచాయతీ కార్యదర్శులు, కంప్యూటర్, కారటే, ట్రైలరింగ్‌లో శిక్షణ ఇస్తున్నారు.



ఉచితంగా వైద్యం ... కోవిడ్ లో ఏసోలేషన్ ఏర్పాటు

విద్యార్థులకు పోటీ పరీక్షలకు సంబంధించిన శిక్షణతో పాటు పేదల సేవా కార్యక్రమాలకు కేరాఫ్ గా ఎంవిఎన్ విజ్ఞాన కేంద్ర నిలిచింది. 2015 లో ట్రైలరింగ్ లో ఈ విజ్ఞాన కేంద్రంలో దాని తోపాటు మర్రిగూడ, గొల్లగూడ, హైదరాబాద్ రోజ్ శిక్షణ కేంద్రాలను ఏర్పాటు చేసి సుమారు 1200 మంది కి పై శిక్షణ ఇచ్చారు. అంతేకాకుండా 2015 డిసెంబర్ 3న ఆదివారం నుండి ప్రతినెల మూగర్, బీపీ, ఫిట్స్, వక్షవాతం రోగులకు ప్రతినెల మూడవ ఆదివారం న్యూరో ఎండి. డాక్టర్. గోపాల శివ నారాయణ ఆధ్వర్యంలో ఉచిత పరీక్షలతోపాటు పేదలకు మందులను పంపిణీ చేస్తున్నారు. కోవిడ్ మహమ్మారి విజంభించి, లాక్ డౌన్ లో ఉన్న సమయంలోను ఎంవిఎన్ విజ్ఞాన కేంద్రం తమ సేవలను నిరంతరాయంగా కొనసాగించింది. ప్రత్యేకంగా ఐసోలేషన్ కేంద్రం ఏర్పాటు చేసి 80 మందికి మూడు నెలల పాటు వైద్యాన్ని అందించారు. ప్రభుత్వ వైద్యశాలలో ఉన్న రోగుల తోపాటు వారి బంధువులకు భోజనాన్ని అందించారు. ఫ్రంట్ లైన్ వారియర్స్ అయినా మున్సిపల్ సిబ్బంది, పోలీస్ వారికి పండ్ల పంపిణీ, శానిటేషన్, మాస్కులను, ఎనర్జీ ద్రవణాలను అందించారు.

సాధించిన విజయాలు ఎన్నో...

2011 లో పీజీ సెట్ లో ఎకనామిక్స్ అధ్యాపకులు డాక్టర్ అక్కినపల్లి మీనయ్య మరి కొంతమంది కోచింగ్ ఇవ్వగా ఉమ్మడి ఆంధ్రప్రదేశ్ లో సెంట్రల్ యూనివర్సిటీలో టాప్ 10 ర్యాంకులలో మొదటి 7 ర్యాంకులు ఎం వి ఎన్ విజ్ఞాన కేంద్రం లో కోచింగ్ తీసుకున్న విద్యార్థులు సొంతం చేసుకున్నారు. 2012లో అప్పటి జాయింట్ కలెక్టర్ హరి జోహార్ లాల్ విద్యార్థుల కోసం కారటే శిక్షణ కార్యక్రమాన్ని ప్రారంభించారు. నేటి వరకు సుమారుగా 2000 వేల మందికి పైగా కారటేలో శిక్షణ ఇచ్చారు. ఇక్కడ శిక్షణ పొందిన ఏడుగురు విద్యార్థులు సొంతంగా కారటే శిక్షణ కేంద్రాలను ఏర్పాటు చేసుకొని ఉపాధి పొందుతున్నారు. కారటే



నేడు పేద విద్యార్థులు చదువుకునేందుకు ఎన్నో సవాళ్లను ఎదుర్కొంటున్నారు. తాను అనుకున్న లక్ష్యాన్ని చేరేవరకు ఎదురయ్యే సమస్యలు ఎన్నో..పేదరికంలో ఉన్న తమ గోడును పట్టించుకునే వారు లేక.. లక్ష్యాన్ని ఎలా చేరుకోవాలో అర్థం కాక తామ ఎంచుకున్న లక్ష్యాన్ని చదులుకోలేక.. గమ్యాన్ని చేరే దారి తెలియక కన్నీళ్లను పెట్టుకునే వాళ్ళు ఎందరో.. ఎక్కడో ఒకచోట నిత్యం మన కళ్ళ ముందు కనిపిస్తూనే ఉంటారు. సర్కారు కొలువులకు ప్రకటనలు వస్తూ ఉన్నాయి. పోటీని తట్టుకోవడానికి యువత శిక్షణ కేంద్రాల వైపు పరిగెడుతోంది. శిక్షణ కేంద్రాల్లో ఫీజులు భరించలేక పేదింటి బిడ్డలు గోస పడుతున్నారు. ఫ్రీ కోచింగ్, స్టడీ మెటీరియల్, ఉచిత భోజనం, పోటీ పరీక్షలకు ప్రిపేర్ అయ్యే విద్యార్థులకు ఇంత కన్నా ఏం కావాలి. సకల వసతులు ఉంటే ఏ టెన్షన్ లేకుండా పరీక్షలకు సన్నద్ధం కావచ్చు. అలాంటి పేద, బడుగు, బలహీన వర్గాల విద్యార్థులకు బాసటగా నిలిచింది తెలంగాణ సాయుధ పోరాట యోధులు మల్లు వెంకట నర్సింహారెడ్డి విజ్ఞాన కేంద్రం (ఎంవీఎన్). గ్రామీణ ప్రాంతాల పేద విద్యార్థులకు పోటీ పరీక్షలకు శిక్షణ ఇస్తూ లక్ష్యాన్ని చేరేలా చేయడంతో పాటు అనేక సేవా కార్యక్రమాలకు కేరాఫ్ గా ఎం వి ఎన్ విజ్ఞాన కేంద్ర నిలిచింది. పేదల పాలిట ఆశాజ్యోతి గా ప్రశంసలను పొందుతుంది. గ్రామీణ యువతకు మానసిక ప్రాంతాల్లో చదువుతున్న యువతకు పైసా ఖర్చు లేకుండా పూర్తిగా ఉచితంగా కోచింగ్ ఇస్తుంది. వారికి కొందరికి అండగా నిలుస్తూ విజయం వైపు నడిపిస్తుంది. అనుభవజ్ఞులైన అధ్యాపకులతో శిక్షణ ఇవ్వడంతో పాటు అందుకు కావలసిన మెటీరియల్‌ను, లైబ్రరీ బుక్స్ ను అందించడంతోపాటు మధ్యాహ్న భోజనాన్ని కూడా ఏర్పాటు చేశారు. నోటిఫికేషన్ వచ్చిన తర్వాత ఇచ్చే కోచింగ్ తో పాటు నోటిఫికేషన్ రాకముందుకు ఫౌండేషన్ కోర్సులు కూడా అందిస్తున్నారు. జిల్లా కేంద్రంలో ఎంవీఎన్ విజ్ఞాన కేంద్రం అందిస్తున్న సేవలకు ఉమ్మడి జిల్లా ప్రజలు ప్రసంశలు కురిపిస్తున్నారు. ఎం వి ఎన్ విజ్ఞాన కేంద్రం తమకు జీవితాన్ని ఇచ్చిందని విద్యార్థులు పేర్కొంటున్నారు. పోటీ పరీక్షలకు నన్నద్ధమయ్యే తమకు ఎంతో ఆసరా అయ్యిందని ఆనందాన్ని వ్యక్తం చేస్తున్నారు. సకల వసతులతో బోధన సిబ్బందితో ఈ విజ్ఞాన కేంద్రం నిరుద్యోగ యువత కల్ప వృక్షంగా మారి ఎంతో మందిని విజయతీరాలకు చేర్చుతోంది.

ఇన్చార్జ్ కల్పూరి నగేష్ ఆధ్వర్యంలో తేజస్విని అనే అమ్మాయికి శిక్షణ ఇవ్వగా ముగ్గురు మధ్య జరిగిన జాతీయ స్థాయి పోటీలో తేజస్విని మూడవ బహుమతి పొందింది. ఇప్పటికీ జిల్లా, రాష్ట్ర స్థాయిలో అనేక పథకాలను సాధించారు.2013 నుండి నేటి వరకు సుమారు రెండు వేల మంది విద్యార్థులకు పైగా పోటీ పరీక్షలకు శిక్షణ ఇవ్వగా శిక్షణ పొందిన వారిలో 15 మంది వీఆర్ఏ, వీఆర్వోలుగా 20 మందికి పైగా ఎస్సై, పోలీస్, ఎక్సైజ్ కానిస్టేబుల్ పోస్ట్ లకు ఎంపికయ్యారు. గ్రూప్ – 2 ఇద్దరు, రైల్వే శాఖ లో ఆరుగురు ఉద్యోగాలను పొందారు. ఎంవీఎన్ విజ్ఞాన కేంద్రం నేతృత్వంలో పనిచేస్తున్న నల్లగొండ ఎకనామిక్స్ ఫోరమ్ లో శిక్షణ పొందిన విద్యార్థులు సుమారు 650 మందికి పైగా రాష్ట్రంలోనే గాక ఇతర రాష్ట్రాలలోని వివిధ విశ్వ విద్యాలయాలలో సీట్లు పొందినారు. ఇందులో శిక్షణ పొందిన విద్యార్థులు 100 మంది జూనియర్, డిగ్రీ కళాశాలలో లెక్చరర్స్ గా పని చేస్తున్నారు. 10 మంది విద్యార్థులు డాక్టరేట్ డిగ్రీ పొందినారు. కొద్ది నెలల కింద ఎం వి ఎన్ విజ్ఞాన కేంద్రం విద్యార్థి కిరణ్ కుమార్ పంజాల్ సెంట్రల్ యూనివ్సిటీలో అసిస్టెంట్ ప్రొఫెసర్ గా నియమితులైనారు. ప్రస్తుతం టీఎస్ దుబ్బాక ఆర్ డి సి (మహిళా) చర్లపల్లి లో ఎకనామిక్స్ లెక్చరర్, ప్రిన్సిపాల్ గా వ్యవహరిస్తున్న షేక్ సుల్తానా, కోదాడ ఎక్సైజ్ సబ్ ఇన్స్పెక్టర్ కే .సైదులు నల్లగొండ ఎకనామిక్స్ ఫోరమ్ విద్యార్థులే. కోవిడ్ సేవర్యంలో గూడా తరగతులకు అంతరాయం కలగకుండా ఆన్లైన్ క్లాస్ లు నిర్వహించి గతం లాగే రాష్ట్ర స్థాయి ప్రథమ ర్యాంక్ ను ఎం వి ఎన్ - నల్లగొండ ఎకనామిక్స్ ఫోరమ్ సాధించింది. ప్రస్తుతం ఎం వి ఎన్ విజ్ఞాన కేంద్రంలో 150 మంది విద్యార్థులకు మధ్యాహ్న భోజన వసతి కల్పిస్తూ వారికి కావలసిన బుక్స్, మ్యాగజైన్ లు, దినపత్రికలు ఇతర సౌకర్యాలను కల్పిస్తున్నారు. గురుకుల, జూనియర్, డిగ్రీ కళాశాలలో లెక్చరర్స్, ప్రభుత్వ జూనియర్, డిగ్రీ కళాశాలలో లెక్చరర్స్ కోసం ఆన్లైన్లో 325 మందికి శిక్షణ ఇస్తున్నారు. రాబోయే కాలంలో లైబ్రరీలో కొత్త బుక్స్, నెట్ తో కూడిన కంప్యూటర్ సౌకర్యాలను విద్యార్థులకు అందజేస్తూ సంస్థలు మరింతగా విస్తరించాలనే ఉద్దేశంతో ఉందని ఎం వి ఎన్ సంస్థ నిర్వాహకులు పేర్కొంటున్నారు. కల్పించాలనే ఉద్దేశంతో ఉన్నట్లు కన్వీనర్ డా.అక్కినపల్లి మీనయ్య కార్య నిర్వహణ కార్యదర్శి పుచ్చకాయల నర్సిరెడ్డి తెలిపినారు.



చదువుకోవడానికి అనువుగా ఉంది
మేడి కీర్తన్-నల్లగొండ

గత రెండు సంవత్సరాల నుండి ఎం వి ఎన్ విజ్ఞాన కేంద్రానికి వస్తున్నాను. చదువుకోవడానికి చాలా అనువుగా ఉంటుంది. ప్రతి పుస్తకము లభిస్తుంది. ఇక్కడికి వచ్చే న్యూస్ పేపర్లను చదువుతూ పుస్తకాలను చదువుతూ పోటీ పరీక్షలకు సిద్ధమవుతున్నాను. ఇటీవలే నిర్వహించిన గ్రూప్ 1 పరీక్షను బాగానే రాశా. గ్రూప్ 2 కోసం మరింత కష్టపడి చదువుతున్నాను.



ఇక్కడి నుండే ఈవెంట్స్‌కు ప్రిపేరయ్యా
అంంపల్లి శిరీష-కన్మెకల్

పోలీసు కానిస్టేబుల్ పరీక్షకు సిద్ధమై విజయవంతంగా పరీక్ష రాశాను. ఈవెంట్స్ కు ఇక్కడి నుండే ప్రిపేర్ అయ్యాను. సర్టిఫికెట్ వెరిఫికేషన్ పూర్తయింది. ఉద్యోగం వస్తుందని నమ్మకం ఉంది. గ్రూప్స్ కి ప్రిపేర్ అవుతున్నాను. ప్రైవేట్ ఇన్స్టిట్యూషన్ లో ఉచితంగా ఇన్ని సౌకర్యాలు లభించవు. నేను ఉద్యోగం పొందాక నా వంతుగా సంస్థ అభివృద్ధికి కృషి చేస్తాను.



నకలు సౌకర్యాలు ఉన్నాయి
కస్తూరి రామకృష్ణ-మాచిక్కగూడెం

చదువుకోవడానికి కావలసిన నకల సౌకర్యాలు ఇక్కడ ఉన్నాయి. 2015 నుండి ఇక్కడికి వస్తున్నాను. గతంలోనే గ్రూప్ 2 వచ్చేది. ఇంటర్వ్యూలో మిస్సయింది. ప్రస్తుతం జూనియర్ వంచాయతీ కార్యదర్శిగా ఉద్యోగం చేస్తున్నానంటే కారణం ఎం వి ఎన్ విజ్ఞాన కేంద్రమే. మరొక్కసారి గ్రూప్ 2 రాయడానికి సిద్ధమవుతున్న.



Determined she moves forward



A ROLE MODEL : Shaik Sultana, who secured the first rank in the MA (Economics) common entrance examination conducted by the Osmania University, engrossed in studies in Nidmanur.

- PHOTO: SINGAM VENKATARAMANA

Secures first rank

NALGONOA: Sheik Sulthana, a native of Nidamanur, secured the first rank in the common entrance examination-2009 conducted by the Osmania University for admission to MA (Economics) course. Nalgonda Economics Forum Convenor A. Meenaiah said that Sulthana enrolled for the free coaching conducted by the forum.

- Staff Reporter

Undeterred by poverty and domestic work, Shaik Sultana, a married woman of Nidmanur, is excelling in her studies with rock solid determination.

Sultana secured first rank in the highly competitive PG common entrance examination-2009 conducted by the Osmania University for admission into MA (economics) course.

A daughter of an agriculturist and wife of a driver, Sultana surpassed all the hurdles posed by poverty with a strong will and completed her degree in first class from the Government Women's Degree College in Nalgonda.

She resumed her studies few years after her marriage and joined Intermediate. Sultana bagged the Prathibha award by securing the top marks in the Intermediate (HEC) group in the entire district.

Later, she pursued her degree after giving birth to a baby boy. She proved her calibre by securing top rank in the MA (economics) common entrance test of Osma-nia University.

"I owe a lot to the constant encouragement from my lecturers and principal", Sultana remarked and said "I credit my success in the PGCET-2009 to the free coaching given by the Economics Forum". I would like to write Group-I and other competitive examinations to become an officer of high repute, she said. I will secure admission in MA (Economics) in the Arts College in Osmania University by virtue of my first ran)?", she said.

I will take coaching for the competitive examinations during my stay in Hyderabad to realise my goal, Sultana said with confidence.

- P. SRIDHAR, Nalgonda

CPGET - 2025 ఫలితాల్లో ఫోరం విద్యార్థులు 1వ, 2వ, 3వ, 6వ, 12వ, 13వ, 14వ, 17వ మరియు 20వ ర్యాంకులు పొంది అద్భుత ఫలితాలు సాధించినారు.





S. Bhuvana Laxmi

1st Rank



N. Ajay

2nd Rank



A. Manasa

3rd Rank



Y. Lokesh

6th Rank

MVN VIGNANA KENDRAM

NALGONDA ECONOMICS FORUM (Regd. No.297/13)

డా॥ అక్కెనపల్లి మీనయ్య గారి ఆధ్వర్యంలో 18 సం.ల ఉచిత అర్థశాస్త్ర ప్రవేశ పరీక్ష శిక్షణ లో
2009, 2016, 2017, 2018, 2020, 2022 మొదటి ర్యాంకులతో పాటు, 2024 లో
41 మంది ప్రభుత్వ జూనియర్ ఎకనామిక్స్ లెక్చరర్స్‌గా, 10 మంది గురుకుల ఎకనామిక్స్ డిగ్రీ లెక్చరర్స్‌గా
మరియు 12 మంది గురుకుల ఎకనామిక్స్ జూనియర్ లెక్చరర్స్‌గా ఎంపిక కావడం

రాష్ట్ర చరిత్రలో అఖండ విజయం



1st Rank
Sk. Sulthana
OU CET-2009
Present: Degree Lecturer in Economics (Gurukul)



1st Rank
K.Shravan Kumar
OU CET-2016



1st Rank
B. Bhavana
KU CET-2016



1st Rank
G. Krishna
OU CET-2017



1st Rank
Bugga Narender
JRF (Ph.D)
OU CET-2018
Present: Govt. JL in Economics



1st Rank
B. Guru Prasad
KU CET-2018
Present: S.A. Social



1st Rank
K. Sai Chandra
CPGET-2020
Present : Gr-IV Junior Assistant



1st Rank
G. Prabhakar Reddy
OU CET-2022, Present: Enterprize Development Cell Manager (Industries), Nalgonda



డా॥ అక్కెనపల్లి మీనయ్య
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