FIFTH EDITION

MACROECONOMICS

THEORY AND POLICY

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Macroeconomics

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Fifth Edition

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Delhi

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Preface

While evolving the content and organisation of *fifth edition* of *Macroeconomics,* the prime objective of prior editions to offer a comprehensive and authentic textbook on macroeconomics is retained. The scope of this book is planned by taking a comprehensive review of the syllabi of macroeconomics recommended by UGC and the Indian universities for undergraduate and postgraduate courses. The book meets the theoretical needs of academicians and policymakers. The extent to which UG and PG students have perceived the book, appreciation gained by the subject teachers and recommendations by various Indian universities, give a strong evidence of the successful efforts laid in its evolution. However, in dealing with a scientific subject, there is always a scope for improving methodological approach for presenting the subject matter more systematically. As such, there are certain significant revisionary changes made in this edition.

What is New in the Fifth Edition?

The structural organisation of the subject matter of *Macroeconomics* remains the same as adopted in previous editions. However, some crucial additions and changes in the text are made in this edition, identified by assessing study needs of students, and suggestions and advice provided by the subject experts. The revisions made are highlighted below.

1. The learning objectives are listed at the beginning of each chapter to highlight its content and scope. Accordingly, the introductory paragraph is also revised.
2. The purview of *Chapter 1* is changed substantially. The section on "What is Economics" is eliminated as the students might understand what economics is about. *Chapter 2* of the fourth edition that dealt

with 'macroeconomic issues, concepts and model building' is shortened and merged with *Chapter 1* to present a consolidated and succinct introduction of macroeconomics.

3. *Chapter 3* presents a deliberate discussion on the methods of measuring the national income in general and in India with the updated empirical data.
4. *Chapter 7* explores the concept and measures of multiplier related to different economic variables. In addition, "Dynamic Multiplier" is elaborately explained with graphical illustrations.
5. Two **NEW** sections are added in *Chapter 12*: (i) Evolution of Money – describing the origin and periodic emergence of different kinds of medium of exchange and store of value, and (ii) Money and Near Money – pointing out the difference between money as legal tender and bank deposits as a medium of exchange.
6. *Chapter 25* is extended with the addition of a **NEW** section entitled "Is Mild Inflation Good for the Economy?". This topic presents that some inflation is desirable for healthy working of the economy.
7. *Chapter 26* elucidates the determination of foreign exchange rate with different theories of exchange rate determination. It also expounds the updated data on foreign exchange rate of Indian currency.
8. The statistical data on different and relevant aspects of Indian economy are updated in subsequent chapters. Specifically, the current data on India's *BOP* in *Chapter 27*, monetary data on India's monetary policy in *Chapter 30*, and budgetary data related to India's budgetary policy in *Chapter 31* are updated.
9. A **NEW** chapter, i.e., – *"Chapter 32: Demonetisation and Implementation of GST in India"* is added with the analysis of the purpose and economic effects of these policy actions taken by the Government of India recently.
10. In *Review Questions*, **NEW** objective questions are added in many chapters to enhance the readers' understanding of the concepts found in the chapter.

How this book is different from other books?

• **Organisation of the Subject Matter**

In this book, the subject matter of macroeconomics is organised based on the origin and the growth of macroeconomic theories and its emergence as a branch of economic science. Following the theoretical growth of macroeconomics, the book is compiled in nine parts.

Part I: Introduction: It gives a detailed description about macroeconomics along with its origin and growth, basic concepts, and macro variables. The working system of the economy is analysed graphically, and the method of national income accounting is narrated with India's example.

Part II: Product Market Analysis: This part explores theoretical aspects of macroeconomics. These include classical postulates and the Keynesian theories of national income determination in three models – simple economy model, closed economy model, and the open economy model.

Part III: Theories of Consumption and Investment: The theories of consumption discussed here include the Keynesian theory, Friedman's theory, life-cycle theory, and Robert Hall's random-walk theory. The theories of investment include theories based on marginal efficiency of capital (*MEC*), acceleration principle, the neo-classical theory, and Tobin's *q*-theory.

Part IV: Money Market Analysis: It contains a detailed analysis of money market including classical postulates of money demand and the Keynesian and the post-Keynesian theories of the money supply, money demand and interest rate determination. The discussion on theory of money supply includes the sources of money supply, money multiplier, and the theory of money supply. The theory of money demand includes the Keynesian theory and the post-Keynesian theories. This is followed by an explanation of theory of interest rate determination.

Part V: Integration of Product and Money Markets: John Maynard Keynes had analysed and developed his product and money-market theories in isolation of one another whereas the two markets are interdependent and interactive. J. R. Hicks had integrated the Keynesian theories of product and money markets through his *IS-LM* model. In this part, there is an elaborate discussion on the Hicksian *IS-LM* model. In a subsequent chapter, synthesis

of classical and Keynesian theories and the growth of post-Keynesian macroeconomics developed by the other economists are discussed.

Part VI: Economic Growth and Business Cycles: This part explains the theories of economic growth and business cycles as developed by the economists of different generations. Having initially described the growth factors, theories of economic growth discussed here include Harrod-Domar model, neo-classical theory, and endogenous growth theory. The theories of business cycle include Hawtrey's monetary theory, Hayek's monetary over-investment theory, Schumpeter's innovation theory, and Hicksian theory of trade cycle along with evaluation of business cycle theories.

Part VII: Dynamics of Inflation and Unemployment: Two economic issues, viz., inflation and unemployment along with their theoretical and empirical interrelationship are discussed in this part. The discussion on inflation includes its meaning, measurement, and desirability. It is followed by the theories of inflation in detail which include classical, neo-classical, Keynesian, and modern theories. This part also emphasises on the policy measures to control inflation.

Part VIII: International Aspects of Macroeconomics: The two important international aspects of macroeconomics discussed here are determinants of the foreign exchange rate and assessment of balance of payments. An adverse balance of payments of a country affects its economy adversely and hence, it needs to be adjusted. The various theoretical approaches and policy measures for the adjustment of balance of payments are discussed which include the classical approach, Mundell-Fleming model, currency devaluation, and monetary approach. These aspects of international economics are covered in detail in three chapters.

Part IX: Macroeconomic Policies: Monetary and Fiscal Policies: In this last part of the book, two fundamentally important macroeconomic policies, viz., monetary and fiscal policies are described. The discussion includes policy objectives, instruments of policy operation, and operational mechanism of policy measures. It is known that neither monetary nor fiscal policy works efficiently as anticipated to achieve the predetermined objectives. The limitations and efficacies of two policy measures are discussed elaborately. This is followed by a brief discussion on two new

policy measures, viz., demonetisation and imposition of Goods and Service Tax (GST) implemented by the Government of India recently.

• **Methodological Approach**

A unique comprehensive methodology is followed in the book for the exposition of macroeconomic theories. The aim is to make complex theories easily understandable for students. Primarily, theories are demonstrated verbally along with the assumptions under which they have been formulated. Their relevance is often justified with reference to some empirical facts derived from historical economic events faced by different countries. Further, theories are presented graphically, which is the most common method used for the illustration of economic theories.

Graphically presented macroeconomic theories are further strengthened with illustrations in the form of mathematical models, specifically in algebraic form. These theoretical models are constructed based on certain hypothetical functions of the relevant variables of the model. The algebraic models are converted into numerical functions to show the empirical applications of the models. After the complete exposition of macroeconomic theories, the text appends their limitations and logical deficiencies as indicated by critics of next generations.

Acknowledgement

I would like to express my deepest appreciation and gratefulness to McGraw Hill Education for seeking opinion and suggestions of subject experts for improving the presentation of the book. A special gratitude to the contribution of the editorial personnel of McGraw Hill. I am also thankful to numerous Indian and foreign students for emailing their appreciations of the book. I express my indebtedness to reviewers for their appreciation, comments, and suggestions for further improvement in the exposition of subject matter of macroeconomics.

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The comments and suggestions from the subject experts, teachers and students are always welcome.

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Part I

Introduction

The objective of Part I of the book is to introduce macroeconomics and to lay down the method of theoretical foundation and basic framework for the study of macroeconomics. Part I of the book contains three chapters. Chapter 1 contains a detailed discussion on the introduction of macroeconomics as a branch of economic science, its origin and growth, the scope of its subject matter, its comparison with microeconomics, the macro-variables and analytical concepts used in macroeconomic analysis, method of building analytical models, and importance and limitations of macroeconomic theories. Chapter 2 explains the working of the economy and presents graphically the circular flow of macro-variables, especially products and money. In Chapter 3, national income accounting has been discussed in detail.

CHAPTER 1

Introduction to Macroeconomics

CHAPTER OBJECTIVES

The objective of this chapter is to introduce macroeconomics and to discuss analytical framework along the following aspects:

- Introduction of macroeconomics as a branch of economics
- A brief account of macroeconomic variables
- Macroeconomics as theoretical and policy science
- Comparison of macroeconomics with microeconomics
- Taking a view of origin and growth of macroeconomics
- The basic concepts and approaches to macroeconomic analysis
- A brief description of model building in macroeconomics
- Importance and limitations of macroeconomics

INTRODUCTION

As is widely known, modern economics has two major branches: (i) ***microeconomics*** and (ii) ***macroeconomics***[1]**.** Although economics as a social science was founded by Adam Smith, the 'Father of Economics'[2], in his book *The Wealth of Nations* in 1776, the subject matter of economics remained confined until 1930s to what is now known as *microeconomics.* The economic thoughts and theories propounded by the classical

economists from the days of Adam Smith down to the neo-classical economists until the Great Depression (1929-1934) was confined to what is known as microeconomics. Therefore, until the early 1930s, the scope of economics remained limited to *microeconomics*. It was in 1936 that John Maynard Keynes laid the foundation of macroeconomics as a new branch of economics by writing his revolutionary book *The General Theory of Employment, Interest and Money* (1936). The subsequent growth of literature on the interpretation and elaboration of Keynesian thoughts and theories and the empirical verification and evaluation of his thoughts and theories over a period of three decades, culminated in the emergence of ***macroeconomics.*** The subject matter and the scope of macroeconomics continued to expand further with the counter-criticism of Keynesian theories and methodology and formulation of new macroeconomic theories, which led to the foundation of post-Keynesian macroeconomics. The prime objective of this book is to present a comprehensive and authentic elaboration of the Keynesian and post-Keynesian macroeconomics.

1.1 WHAT IS MACROECONOMICS

Macroeconomics is essentially the study of the performance and the behaviour of the economy as whole. It may be noted at the outset that defining economics has been a difficult proposition. So is the case with macroeconomics. Nevertheless, some economists have attempted to define macroeconomics according to their own perception of its subject matter. Let us take a view of some relatively comprehensive definitions of macroeconomics offered by some famous economists as it would give broad view of what macroeconomics is about.

Gardner Ackley: "Macroeconomics is the study of forces or factors that determine the levels of aggregate production, employment and prices in the economy, and their rate of change over time"[3].

Kenneth E Boulding: "Macroeconomics is the study of the nature, relationships and behaviour of aggregates of economic quantities.... Macroeconomics ... deals not with individual quantities as such, but 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"[4].

J. M. Culbertson: "Macroeconomic theory is the theory of income, employment, prices and money"[5].

P. A. Samuelson and W. D. Nordhaus: "Macroeconomics is the study of the behaviour of the economy as a whole. It examines the overall level of a nation's output, employment, and prices"[6].

Although these definitions are fairly comprehensive, they do not reveal the exact nature and scope of modern macroeconomics, nor do they fully capture its subject matter. Since "macroeconomics is [still] a young and imperfect science" (Mankiw, *Macroeconomics*, 2003, p. 3), it is difficult to define it precisely. However, the definitions quoted above do give an idea of the central theme of theoretical macroeconomics, and this is what matters in economics. The central theme that emerges from the above definitions may be stated as follows: *Macroeconomics is essentially the study of the behaviour and performance of the economy as a whole. It examines the relationship and interaction between the 'factors and forces' that determine the level and growth of national output and employment, general price level, and the balance of payments of the economy.* This definition too should be treated only as a working definition of macroeconomics.

In order to comprehend the subject matter of macroeconomics, let us look at the basic questions that macroeconomics seeks to answer.

- What determines the levels of economic activities, total output, the general price level, and the overall employment in a country?
- How is the equilibrium level of national income determined?
- What causes fluctuations in the national output and employment?
- What determines the general level of prices in a country?
- What determines the level of foreign trade and trade balance?
- What causes disequilibrium in the balance of payments of a country?
- How do the monetary and fiscal policies of the government affect the economy?

- What kind of economic policies can restrain economic recession and steer the economy on the path of growth?

These are some major theoretical questions that macroeconomics seeks to answer.

1.2 MACROECONOMIC VARIABLES

As mentioned above, macroeconomics is the study of the behaviour of the economy as a whole. The behaviour of the economy as a whole is studied on the basis of the behaviour of the aggregate variables, i.e., ***macroeconomic variables***. Macroeconomic variables are, in general, interrelated and interdependent. Macroeconomics provides the framework for analysing the nature and extent of relationship and interactions between the aggregate variables, which leads to the formulation of macroeconomic theories. It is, therefore, important to have a view of macroeconomic variables. For analytical purpose, macroeconomic variables can be classified under two categories: (i) Goods market macro variables, and (ii) Money market macro variables. The two kinds of macro variables are listed in Table 1.1.

Table 1.1 Macroeconomic Variables

Goods Market Macro Variables	Money Market Macro Variables
1. Gross Domestic Product (*GDP*)	1. Aggregate money supply
2. Aggregate consumption expenditure	2. Aggregate money demand
3. Aggregate savings	3. Transaction demand for money
4. Aggregate investment	4. Speculative demand for money
5. Total tax revenue	5. Interest rate
6. Total government expenditure	6. Exchange rate
7. Total exports	7. Balance of payments
8. Total imports	
9. Employment	

Among the macro variables of the ***goods market***, gross domestic product (*GDP*) is the most important macro variable as all the other macro variables of the goods market, except employment, are the components of *GDP*. All the goods-market variables are *flow variables* in the sense that they are subject to change over time with change in their determinants. Also, all

goods-market macro variables are interrelated and interdependent. The interrelationship and interdependence of the macro variables will be discussed ahead along with the theory of income determination.

In case of macro variables of the ***money market***, aggregate money supply and aggregate money demand are the two most important macro variables. The aggregate money supply is determined autonomously by the central bank of the country and, in the analysis of money market, it is treated to be a stock variable. But, money demand is treated as a flow variable. Money demand consists of transaction plus speculative demands for money. The variable 'interest rate' is determined by aggregate money supply and money demand.

Beside, the macro variables of the goods and money market are also interrelated and interdependent. Their interrelationship and interdependence are elaborately discussed and presented graphically and in functional form in Chapter 17. It may be noted here that the analysis of the interaction between macro variables of goods and money market makes a very important contribution to macroeconomics, known as *IS-LM* model. The interaction between the goods market and money market variables determines the level of the ultimate target variables: (i) economic growth, (ii) general price level, and (iii) balance of payments.

1.3 MACROECONOMICS AS A THEORETICAL AND A POLICY SCIENCE

As Samuelson and Nordhaus have pointed out, "…macroeconomics is still an area of great controversy among economists and politicians alike" (*op. cit.*, p. 381). While some economists consider macroeconomics basically as a theoretical science, some others consider it as a purely policy science. This kind of controversy on the nature of macroeconomics raises a question: Is macroeconomics a theoretical science or a policy science? Macroeconomics, however, has both *theoretical* and *policy* orientations. Let us now look at theoretical and policy orientations of macroeconomics.

Macroeconomics as a Theoretical Science

Macroeconomics as a theoretical science uses theoretical models to explain the behaviour and the determination of the equilibrium level of macroeconomic variables (national output, employment, money supply and demand, general price level and balance of payments, etc.) and analyses the nature of relationship between them in a logical way and in an orderly manner. The most important aspect of macroeconomic theories is that they provide framework and analytical tools to analyse the macroeconomic phenomena. Macroeconomic theories that offer theoretical explanation of the determination of national income, aggregate level of consumption, saving and investment, employment and growth rate, behaviour of the general price level, determination of product-and-money market equilibrium, exchange rate and balance of payments constitute the main body of theoretical macroeconomics. Macroeconomic theories, though not perfect, do provide a great deal of understanding of, and insight into, the working of the economy, and in identifying the factors and forces that cause adverse or desirable effects on the economy. A clear understanding of macroeconomic dynamics is a necessary condition for the formulation of appropriate macroeconomic policies to achieve predetermined goals.

Macroeconomics as a Policy Science

As regards its *policy orientation*, macroeconomics provides a sound theoretical framework for investigating the causes and effects of economic problems—unemployment, inflation, recession and depression, stagflation, etc.—and provides guidelines for devising appropriate policy measures to find solution to the problem. Also, macroeconomics analyses the working and effectiveness of macroeconomic policies, especially the monetary and fiscal policies, on the economy. The knowledge of working and efficacy of these policies are extremely useful in devising appropriate policy measures for controlling and regulating the economy to achieve the desired goals. It is, perhaps, for this reason that Dornbusch, *et al.,* hold the view that "Macroeconomics is an applied science". But they add (in the very next paragraph), "Macroeconomics is very much about tying together facts and theories"[7]. It means that there are macroeconomic 'theories' which can be 'tied' together with 'facts' to make macroeconomic studies. However, the

policy aspect of macroeconomic studies has assumed such a great importance in modern times that in the opinion of some economists, "Macroeconomics is first and foremost a policy science"[8]. Macroeconomics as a policy science provides an analytical framework and guidelines for devising appropriate policy measures for controlling or eliminating undesirable factors in the economy and to guide it on the path of stable growth.

Conclusion

It may be concluded at the end that macroeconomics has both theoretical and policy orientations. In fact, the origin of macroeconomics can be related to the search for means and measures to solve such economic problems as the Great Depression and unemployment. But, for finding out an appropriate feasible solution to such economic problems, it is indispensable to develop analytical frameworks and economic models to understand the working of the economy, and interaction and interdependence of the macro variables. Any random choice and application of policy measures to solve big economic problems can do more harm than good to the economy. Building analytical framework and models represents the theoretical nature of macroeconomics. However, macroeconomic theories are not abstract theories: they have been developed on the basis of facts of economic life. Therefore, macroeconomic theories, though imperfect, have a good deal of application in policy formulation. In case of macroeconomics, theories and policies go together.

1.4 MICROECONOMICS vs. MACROECONOMICS

Before we proceed, let us have a glance at how the economists distinguish between microeconomics and macroeconomics to help us in comprehending the subject matter of the two branches of modern economics.

1.4.1 Units of Study

The first distinction between the two branches of economics is made on the basis of the **unit of study**. As mentioned above, microeconomics studies the economic behaviour of **individual decision-making units** (individuals as consumers and producers); how the price of an ***individual product*** is determined in the market; and how the price of a factor determined. Microeconomics analyses how an individual household decides on what to consume, how much of it to consume, and how to allocate its total consumption expenditure on various goods and services so that its total utility is maximised. Similarly, microeconomics analyses how individual firms take decision on what to produce and how to price its product so that its total profit is maximised, given its resources. Also, microeconomics analyses the working of markets for individual goods and services and explains how prices of individual goods and services are determined in the market.

In simple words, microeconomics takes a microscopic view of the economic system and studies how the system works at the micro level. According to Lerner, "Microeconomics consists of looking at the economy through a microscope, as it were, to see how the millions of cells in the body economic—the individuals or households as consumers, and the individuals or firms as producers—play their part in the working of the whole economic organism"[9].

In contrast, the **unit of study** in macroeconomics is the **economy as a whole**. Macroeconomics is concerned with the nature, relationships, and the behaviour of national economic aggregates such as national income, total consumption expenditure, savings and investment, total employment, and the general price level. As Boulding has put it, "Macroeconomics… deals not with individual quantities as such, but aggregate of these quantities—not with individual incomes, but with the national income, not with individual prices, but with the [general] price level, not with individual output, but with the national output"[10]. In brief, macroeconomics studies the working and performance of the economy as a whole.

1.4.2 Basic Assumptions of Microeconomics and Macroeconomics

Another factor that distinguishes the two branches of economics is the **basic assumption** on which the microeconomic and macroeconomic studies are based. Microeconomics assumes all the macro variables to be given. That is, it assumes the level of total production (national income), consumption, saving and investment, employment, and the general price level, etc., to remain constant. In contrast, macroeconomics assumes economic decisions of households and firms, prices of individual products to be given and studies the behaviour of the macro variables. Briefly speaking, *what microeconomics treats as constants, macroeconomics treats them as variables and what macroeconomics treats as constants, microeconomics treats them as variables.*

1.4.3 Machlup's View on Micro-Macro Distinction

Machlup has given a very important view on micro-macro distinction of economics. According to him, it is difficult to draw a sharp line between microeconomics and macroeconomics or to put the two branches of economics in watertight compartments. Fritz Machlup has examined four criteria proposed by various authors for making a distinction between microeconomics and macroeconomics, viz., (i) how one looks at the economy, (ii) whose actions are analysed, (iii) what is being aggregated, and (iv) what role is given to the price relationships. He has concluded that 'there is no agreement on the meaning and scope of the concepts of micro and macro theory'[11]. Some authors are also of the opinion that the division of economics between micro and macro economics "often contributes more to fuzzy confusion than to rigorous understanding". The confusion might arise because there is a large area of economic issues and studies that overlap with the boundaries of the two branches. For instance, study of a particular industry, say, IT industry, is generally treated as a micro study. But if the scope of the study is extended to capture its effect on employment, *GDP*, balance of payments, etc., it enters the area of macroeconomics. Similarly, a study of change in banks' prime lending rate

(*PLR*) and its effect on banks' loans and advances can be treated as a microeconomic study. However, if the scope of the study is enlarged to cover the effect of changes in the *PLR* on the overall financial market and its repercussions on the aggregate investment, the study enters the area of macroeconomics.

1.4.4 Microeconomics and Macroeconomics as Two Separate Branches of Economics

As mentioned above, some economists do not agree on the division of economic science between micro and macroeconomics. Notwithstanding the disagreement of some economists on the division of economics between micro and macroeconomics, there are certain issues like economic growth, unemployment, inflation, stagflation, etc., often faced by most economies, which cannot be analysed and tackled simply by analysing individual markets and individual products, or even by analysing a segment of the economy. Microeconomics and macroeconomics are, in fact, recognised by most economists as the two major branches of economic studies for both analytical and practical purposes. Boulding[12] has justified macroeconomics as a separate branch of economics on the basis of 'macroeconomics paradoxes' or more appropriately, micro-macro paradoxes. The micro-macro paradoxes refer to paradoxical facts that are true in case of individual economic units and quantities but are not true in case of economic aggregates and for the economy as a whole.

Micro-Macro Paradoxes

Boulding[13] has pointed out the following three important **Micro-Macro Paradoxes**:

1. An important paradox pertains to ***cash holding***. If all the individuals decide to hold a larger amount of cash, the total individual cash holding increases which decreases the level of transactions. But the stock of money remains the same for the overall transactions in the economy as a whole.

2. The second paradox is related to ***saving and investment***. If an individual saves and invests more, his or her income increases. But this is not true for the economy as a whole. The reason is if all the individuals with given incomes decide to save more and more, the consumption expenditure will decrease by the same amount. Decrease in consumption expenditure reduces the aggregate demand for consumer goods. This reduces the prospect for investment. The aggregate investment may even decrease which will reduce the level of aggregate income.
3. The third paradox pertains to ***profit and wages***. At micro level, one tends to accept the proposition that the distribution of national income between wage incomes and profits depends on the relative bargaining power of the labour and the employers. According to Boulding, however, it depends on "a combination of other factors, the most important of which are decisions of management to invest, i.e., to accumulate real assets, and the complex of the decision of the whole society about liquidity preference". Boulding concludes, "It is these paradoxes, more than any other factor, which justify the separate study of the system as a whole, not merely as an inventory or list of particular items".

1.5 ORIGIN AND GROWTH OF MACROECONOMICS

As already mentioned, the foundation of macroeconomics, as a separate branch of economics, was laid down by a British economist, John Maynard Keynes (1883–1946) in his revolutionary book *The General Theory of Employment, Interest and Money* (1936). This should, however, not mean that the economists of the pre-Keynesian era had not given thought to the macroeconomic problems of the economy. Keynes has himself pointed out that the use of macro approach to certain economic phenomena can be traced back to the writings of the 16th century economists called 'mercantilists' and those of the later era. The economists of the 16th and 17th century, called 'mercantilists' were the first to use macro approach to the economic problems of those days. According to Keynes, the

mercantilism made "a contribution to statecraft, which is concerned with the economic system as a whole and with securing optimum employment of the system's entire resources …"[14]. The 18th century economists, called 'physiocrats' analysed the 'circular flows of wealth' in an economy in an aggregative framework. Quesnay's *Tableau Economique* (1758) is regarded as one of the most remarkable macro models of the early days. The circular flow model was later developed and used by Walras, Wicksell, Bohm Bawerk and Schumpeter to analyse the flow of national income and expenditure. During the 18th century, Malthus contributed greatly to aggregative economic analysis in so far he pointed out the deficiency in the Say's law and showed that aggregated demand might fall short of the full employment level and this may result in stagnation in demand for capital and subsequent stagnation in demand for labour. In the 19th century, Karl Marx used macro approach to economic analysis of the society. However, pre-classical macroeconomic views and thoughts were not strong enough to lay the foundation of macroeconomics.

In this section, we describe briefly the origin and growth of macroeconomics as a separate branch of economic science. The origin and growth of macroeconomics is reviewed here in three stages of its development: (i) classical macroeconomics, (ii) 'Keynesian Revolution' and macroeconomics, and (iii) post-Keynesian developments in macroeconomics.

1.5.1 Classical Macroeconomics

The 'classical views'[15] refer to the views and thoughts of the *classical economists*. The classical economists are referred to the economists from Adam Smith, the founder of economics, to those of the 18th and 19th centuries. The views, thoughts and theories formulated by the *classical economists*, mainly by David Ricardo, John Stuart Mill, Robert Malthus, Alfred Marshall, and Arthur Cecil Pigou are regarded as the classical economics.

The classical economists had not developed any coherent macroeconomic theory. The macroeconomic views of the classical economists, as envisaged

by the economists of the post-Keynesian era are treated as the ***classical macroeconomic postulates***. The classical postulates can be stated as follows.

According to the classical economists, if market forces—demand and supply—are allowed to work freely, the following macroeconomic features continue to exist.

1. There will always be full employment in the long run, and unemployment, if ever, will be a short-run phenomenon.
2. The equilibrium level of national income is determined at the level of full employment and national income is equal to the total cost of production.
3. The economy is always in equilibrium in the long run and there is neither overproduction nor underproduction in the long run.

Collapse of Classical Macroeconomics

The *macroeconomic postulates* of classical economists prevailed until 1929 – the year in which the Great Depression of 1930s had started. The Great Depression exposed the 'inadequacy of the *theoretical* foundation of the *classical laissez-faire* doctrine'. It proved the classical postulates to be theoretically untenable. In fact, the Great Depression had taken place in the US in 1929 when the US economy was working on the *principles of the laissez faire system*. Yet the US stock market collapsed on 29 October 1929, which caused the devastation of the US economy. The devastation of the US economy had a widespread disastrous impact on the international economy causing the Great Depression of 1930s. During the period of Great Depression (1929–1939), there was large-scale unemployment in almost all free market industrial economies and their national income had declined to an unprecedented level. In the US, for example, unemployment had increased from about 3 per cent in 1929 to 25 per cent in 1933; production of goods and services had declined by 30 per cent; price level had fallen by 30 per cent; and business investment had dropped to almost nil[16]. Most industrial countries, e.g., the Great Britain, France and Germany, had experienced the similar devastation of their economy. The classical economics could neither offer an explanation to the causes and

consequences of the Great Depression nor provide any market solution to the economic problems faced by these countries. This marked the collapse of the classical macroeconomics.

1.5.2 Keynesian Revolution and Emergence of Macroeconomics

The collapse of classical economics created a big gap between classical economics and economic realities of the day. The need of the time was to have a fresh look at the working of the economic system and to devise the appropriate policy measures to revive the depressed economies. It was John Maynard Keynes – an erstwhile neo-classical economist[17] – who revealed the limitations and inadequacy of the classical economics in dealing with economic problems at the national level in his book *The General Theory of Employment, Interest and Money* (1936). Keynes proved that classical economics was not theoretically sound enough to explain the working of the economy as a whole, to predict the consequence of the economic changes, and to provide solution to economic problems arising at the country level. Having pointed out the deficiencies and inadequacies of the classical economics, Keynes constructed his own macroeconomic theories related to national income, employment, and money market. Keynesian theories mark the foundation of ***macroeconomics***. Keynesian contribution to economic science is treated as ***Keynesian Revolution***.

The central theme of the Keynesian macroeconomics may be summarised as follows:

- The level of output and employment in the economy is determined by the aggregate demand for goods and services, given the resources of the country.
- Money market equilibrium and interest rate are determined by the aggregate demand for money, given the money supply.
- The unemployment in any country is caused by lack of aggregate demand and the economic fluctuations are caused by demand deficiency.

- The demand deficiency can be removed through compensatory government spending.

Keynesian economics stresses the role of *demand management* by the government for the stable growth of the economy. "Perhaps the most fundamental achievement of the Keynesian revolution was the reorientation of the way economists view the influence of government activity on the private economy"[18]. Contrary to the classical view that government spending 'crowds out' private investment, Keynesian economics stresses the favourable macroeconomic effects of the government spending[19] on national income and employment through its multiplier effect. The dominance of Keynesian thought banished the classical view at least for sometime.

The period between the late 1930s and the mid-1960s is called the "period of Keynesian Revolution" or the "Keynesian Era". During this period, most economists were Keynesian and most governments, especially in the developed countries, had adopted Keynesian policies. The Keynesian thoughts had pervaded also the underdeveloped countries as most less developed countries struggling to emerge out of their 'low-equilibrium trap' adopted Keynesian approach to initiate the process of economic development. In fact, India's Development Plans are largely based on the Keynesian theory of growth and employment. So all-pervasive was the Keynesian economics until the 1960s!

However, the real economic world has neither conformed to any particular economic thought or principle, nor complied with any idea or ideology. Economic system goes through a continuous process of evolution. It passes from one system to another, rendering prevailing thoughts, theories and laws redundant and forcing economists to examine the relevance of existing theories and to find new explanation to emerging economic conditions. This is what happened with Keynesian revolution also as it gave way to new kinds of revolutionary thoughts and theories encapsulated as post-Keynesian macroeconomics as discussed below.

1.5.3 Post-Keynesian Developments in Macroeconomics

The Keynesian economics started showing signs of its failures in the early 1970s. Keynesian economics, especially Keynesian fiscal measures, failed to provide solution to economic problems of low growth, high unemployment and high rate of inflation faced by most developed countries, especially by the US. It could offer neither a reasonable explanation nor an effective solution to the problem of "stagflation" faced by the US in the early 1970s. The inefficacy of the Keynesian policy measures lead to the growth of a new school of macroeconomic thoughts, called "monetarists". Monetarism was subsequently followed by the emergence of some other schools of macroeconomic thoughts. The post-Keynesian developments in macroeconomics include the following kinds of macroeconomic thoughts and theories:

1. Monetarism: A Counter Revolution
2. Neo-classical Macroeconomics
3. Supply-side Economics
4. Neo-Keynesianism

Let us have a brief look at the origin and central theme of these areas of macroeconomics.

Monetarism: A Counter-Revolution

As mentioned above, the Keynesian economics started showing the signs of its failure during the 1970s as it failed to provide solution to economic problems of those days. This raised the doubt about the relevance and applicability of Keynesian economics to the problems of growth and stability. A group of economists, called "monetarists", led by Milton Friedman claimed that Keynesian theory had failed to predict national output, price level, rate of employment and unemployment, and interest rate. The monetarists came out with a new revolutionary thought. According to the monetarists, the *role of money* is central to the growth and stability of national output, not the role of aggregate demand for real output, as Keynesians believe. In the opinion of the monetarists, *money supply is*

the main determinant of output and employment in the short run and price level in the long run. The monetarists added a new dimension to both macroeconomic theory and policy. At the theoretical level, the emphasis shifted from the analysis of the role of aggregate demand for real output to the aggregate demand for and supply of money, and at the policy level, the emphasis shifted from aggregate demand management to monetary management.

The monetarists' view led to a prolonged debate between the monetarists and the Keynesians. The central theme of debate was 'what determines the aggregate demand'. "While mainstream theories point to a number of different forces that influence aggregate demand—monetary and fiscal policies, investment spending, net exports and so forth—monetarists hold that changes in the money supply are far more important than all other forces in affecting nominal GNP in the short run and prices in the long run"[20]. The debate remains inconclusive.

Neo-Classical Macroeconomics

While the debate between the Keynesians and the monetarists continued, Keynesian economics was attacked in the 1980s by another group of economists, called the 'radicalists'. Their macroeconomic propositions are called *neo-classical macroeconomics*. The neo-classical macroeconomics is the creation of virtually one economist, Robert E. Lucas, the Nobel Laureate of 1995. In the opinion of Lucas, Keynesian orthodoxy has turned redundant not only from the economic policy point of view but also from theoretical and methodological points of view. Many other economists joined Lucas creating a neo-classical school. The neo-classical school emphasises the role of *rational expectations* of the individuals about future economic events, especially those working on the supply side of the economy, i.e., the producers, and their expectations about the future policies of the government. The core of the radicalist thought is that the people's rational expectations about the government's monetary and fiscal policies determine the behaviour of aggregate supply and aggregate demand in such a way that real output remains unaffected, though the prices and wages go up. For instance, suppose anticipated changes in monetary and fiscal policies cause a forward shift in aggregate demand curve and an immediate

and equal backward shift in the aggregate supply curve. These kinds of shifts in aggregate demand and supply curves do not show any change in the real output but these changes do show a rise in wages and prices. However, the neo-classical macroeconomics too remains a matter of inconclusive debate.

Supply-Side Economics

While the issue of what determines the aggregate demand continued to be debated, there emerged another school of macroeconomists, called the "supply-side economists". Recall that the Keynesians and the monetarists had both built their argument for 'what determines the aggregate demand' on the basis of the factors operating on the demand side of the market. In contrast, the "supply-side economists", led by Arthur Laffer, emphasised the role of the factors operating on the supply side of the market. They attempted to provide an alternative to the Keynesian theory of employment and output. While the Keynesian economists – the demand siders – emphasise the role of shift in aggregate demand in changing employment and output, supply-siders stress the role of shift in the aggregate supply curve. Arthur Laffer, widely known for his famous "Laffer curve"[21], argued that a cut in the tax rate shifts aggregate supply curve rightward and leads to a rise in output and employment. Note that both Keynesians and supply-siders considered fiscal policy as the main instrument of economic management.

Neo-Keynesianism

In spite of several path-breaking contributions made to macroeconomic thoughts over the past four decades since 1960s, Keynesian economics remains the focal point of reference for all the schools of macroeconomists either for attack or for its reconstruction. In the process, there emerged another school of thought called "Neo-Keynesians"[22]. Contrary to the new classical group, the Neo-Keynesians argue that the market is not always cleared, in spite of individuals (households, firms and labour) working for their own interest. They give the reason that 'information problem and cost

of changing prices lead to some price rigidities' which cause fluctuations in output and employment[23].

Conclusion To conclude, it may be added that "Mankiw has rightly remarked that macroeconomics is [still] a young and imperfect science"[24]. Nevertheless, macroeconomics theories and policies as developed by the economists so far have gained wide recognition and application. This fact has led to emergence of macroeconomics as a dominant branch of economic science.

1.6 SOME BASIC CONCEPTS AND APPROACHES TO MACROECONOMIC ANALYSIS

In the preceding section, we have narrated briefly the emergence and growth of macroeconomics as a branch of economics. The macroeconomists of different generations have adopted different concepts and have applied different approaches to analyse the macroeconomic phenomena. In this section, we outline some basic concepts used and approach adopted by the economists in general as it will be helpful in comprehending macroeconomic theories developed by the economists of different generations.

1.6.1 Concept of Stock and Flow Variables

Macroeconomic variables used in macroeconomic studies have been described in Section 1.2 of this chapter. In the theoretical analysis of a macroeconomic phenomenon, macro variables are generally classified under two categories: (i) ***stock variables,*** and (ii) ***flow variables.*** A brief description of *stock variables* and *flow variables* are given below:

(i) Stock Variables: Stock variables refer to the quantity or value of certain economic variables estimated at a point of time, depending on the period of financial accounting, e.g., at the end of the financial year – 31st March - or at the end of the calendar 31st December. In economic analysis, the

variables that are supposed or assumed to remain constant over the period of analytical framework are treated as *stock variables.* For example, the stock of capital of a country is deemed to remain constant during the financial year. So the stock of capital is treated as a stock variable. Similarly, the total annual money supply and labour employment are treated as stock variables.

(ii) Flow Variables: Flow variables are the macro variables that are expressed per unit of time, e.g., per hour, per day, per week or per year. For example, gross domestic product (*GDP*)**,** aggregate consumption, savings, investment, exports and imports are treated as flow variables

In order to understand the distinction between the stock and the flow variables, consider the following examples. The stock of food grains with Food Corporation of India (FCI) is taken as a stock variable but the supply of food grains per unit of time by FCI to the food grain dealers is treated as a flow variable. A fixed deposit with a bank is a stock variable and the interest earned on the deposit, e.g., the monthly or annual interest income, is a flow variable. The stock of capital in terms of plant, building, machinery stocks, etc., is a *stock variable* and the annual investment is a *flow variable*. The macroeconomic stock and flow variables are listed in Table 1.2.

Table 1.2 Macroeconomic Stock and Flow Variables

Stock Variables	Flow Variables
Stock of Capital (K)	Gross National Product (GNP)
Supply of Money (M)	Consumption Expenditure (C)
Business Inventories (BI)	Savings (S) and Investments (I)
Accumulated Savings (S)	Exports (X) and Imports (M)
Labour Force (L)	Change in Inventories (ΔK)
Total Employment (N)	Government Revenue (R)
Accumulated Wealth	Government Expenditure (G)

It is important to note that the classification of stock and flow variables, as given above, is a matter of analytical convenience and practice. Conceptually, it is difficult to make an all-purpose classification of macroeconomic variables between stock and flow. For, given the purpose of

analysis, a flow variable can be interpreted as a stock variable and vice versa. For example, national income is a flow variable, but it can be treated as a stock variable for the year of reference. Similarly, employment is a stock variable, from head-count point of view, but from the viewpoint of work effort in terms of man-hours, it can be treated as a flow variable.

Furthermore, macroeconomic variables are open to different interpretations. Therefore, it is difficult to make a clear distinction between the two kinds of variables. This causes a 'dangerous' confusion with regard to stock and flow variables. According to Gardner, "… almost no other single source of confusion is more dangerous in economic theory—not only to beginners, but sometimes also to advanced students in the field"[25]. He cites some examples of certain variables which are open to such confusion. 'Money is a stock variable' but when it is exchanged for goods, it becomes 'flow'; 'income is flow, wealth [accumulated income] is stock'; 'saving is a flow' but 'accumulated saving is a stock; and investment is a flow' but accumulated investment 'is a stock'. He has suggested, "Upon encountering any variable, the student should spend a moment determining whether it is a stock, a flow, or a ratio concept. … Much confusion will be saved by this exercise."

1.6.2 Equilibrium and Disequilibrium

The concepts of equilibrium and disequilibrium are widely used in both microeconomic and macroeconomic analyses. Here, we describe briefly the concepts of equilibrium and disequilibrium as applicable to macroeconomic analysis.

Equilibrium

The term 'equilibrium' has been formed by combining two Latin words– *aqui* meaning 'equal', and *libra* meaning 'balance'. Thus, 'equilibrium' means 'equal balance'. In general sense, it means a state of balance between the opposite forces. In economic sense, equilibrium refers to a state or situation in which opposite economic forces, e.g., demand and supply, cost and benefit, etc., are in balance and there is no in-built tendency to deviate from this position. Machlup defines equilibrium as "a constellation of