

MACRO ECONOMICS I

Study material

CORE COURSE (II)

For

II SEMESTER BA ECONOMICS

(2011 Admission)



UNIVERSITY OF CALICUT
SCHOOL OF DISTANCE
EDUCATION

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For II SEMESTER BA ECONOMICS

MACRO ECONOMICS I

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INDEX

MODULE	PARTICULARS	PAGE NO.
I	Why study Economics	5
II	Micro Economics and Macro Economics	19
III	Classical Macro Economic Model	32
IV	Keynesian Macro Economic Model	70
V	The Elementary ISLM Model	94

Module I: Why study Economics

A Methodological framework of studying Economics – Its relevance and importance

1.1 What is Economics?

Economics studies the allocation of scarce resources among people – examining what goods and services wind up in the hands of which people. Why scarce resources? Absent scarcity, there is no significant allocation issue. All practical, and many impractical, means of allocating scarce resources are studied by economists. Markets are an important means of allocating resources, so economists study markets. Markets include stock markets like the New York Stock Exchange, commodities markets like the Chicago Mercantile, but also farmer's markets, auction markets like Christie's or Sotheby's (made famous in movies by people scratching their noses and inadvertently purchasing a Ming vase) or eBay, or more ephemeral markets, such as the market for music CDs in your neighborhood. In addition, goods and services (which are scarce resources) are allocated by governments, using taxation as a means of acquiring the items. Governments may be controlled by a political process, and the study of allocation by the politics, which is known as political economy, is a significant branch of economics. Goods are allocated by certain means, like theft, deemed illegal by the government, and such allocation methods nevertheless fall within the domain of economic analysis; the market for marijuana remains vibrant despite interdiction by the governments of most nations. Other allocation methods include gifts and charity, lotteries and gambling, and cooperative societies and clubs, all of which are studied by economists.

Some markets involve a physical marketplace. Traders on the Bombay Stock Exchange get together in a trading pit. Traders on eBay come together in an electronic marketplace. Other markets, which are more familiar to most of us, involve physical stores that may or may not be next door to each other, and customers who search among the stores, purchasing when the customer finds an appropriate item at an acceptable price. When we buy bananas, we don't typically go to a banana market and purchase from one of a dozen or more banana sellers, but instead go to a grocery store. Nevertheless, in buying bananas, the grocery stores compete in a market for our banana patronage, attempting to attract customers to their stores and inducing them to purchase bananas. Price – exchange of goods and services for money – is an important allocation means, but price is hardly the only factor even in market exchanges. Other terms, such as convenience, credit terms, reliability, and trustworthiness are also valuable to the participants in a transaction.

We may also define Economics as the study of how people choose to use resources. Resources include the time and talent people have available, the land, buildings, equipment, and other tools on hand, and the knowledge of how to combine them to create useful products and services. Important choices involve how much time to devote to work, to school, and to leisure, how many dollars to spend and how many to save, how to combine resources to produce goods and services, and how to vote and shape the level of taxes and the role of government.

Often, people appear to use their resources to improve their well-being. Well-being includes the satisfaction people gain from the products and services they choose to consume, from their time spent in leisure and with family and community as well as in jobs, and the security and services provided by effective governments. Sometimes, however, people appear to use their resources in ways that don't improve their well-being.

In short, economics includes the study of labor, land, and investments, of money, income, and production, and of taxes and government expenditures. Economists seek to measure well-being, to learn how well-being may increase over time, and to evaluate the well-being of the rich and the poor. The most famous book in economics is the *Inquiry into the Nature and Causes of The Wealth of Nations* written by Adam Smith, and published in 1776 in Scotland.

Let us go through some of the formal definitions of Economics.

“Economics is the study of people in the ordinary business of life.”-- Alfred Marshall(*Principles of Economics*).

“Economics is the science which studies human behavior as a relationship between given ends and scarce means which have alternative uses.” -- Lionel Robbins(*An Essay on the Nature and Significance of Economic Science*)

Economics is the “study of how societies use scarce resources to produce valuable commodities and distribute them among different people.” -- Paul A. Samuelson(*Economics*)

1.2 Subject matter of Economics

There is a difference of opinion among economists regarding the subject-matter of economics. Adam Smith, the father of modern economic theory, defined economics as a subject, which is mainly concerned with the study of nature and causes of generation of wealth of nation.

Marshall introduced the concept of welfare in the study of economics. According to Marshall; economics is a study of mankind in the ordinary business of life. It examines that part of individual and social actions which is closely connected with the material requisites of well being. In this definition, Marshall has shifted the emphasis from wealth to man. He gives primary importance to man and secondary importance to wealth.

The Robbinsian’s concept of the subject-matter of economics is that: ”economics is a science which studies human behavior as a relationship between ends and scarce means which have alternative uses”. According to Robbins (a) human wants are unlimited (b) means at his disposal to satisfy these wants are not only limited, (c) but have alternative uses. Man is always busy in adjusting his limited resources for the satisfaction of unlimited ends. The problems that centre round such activities constitute the subject-matters of economics.

Paul. A. Samuelson, however, includes the dynamic aspects of economics in the subject matter. According to them, ‘economics is the study of how man and society choose with or without money, to employ productive uses to produce various commodities over time and distribute them for consumption now and in future among various people and groups of society’.

The subject matter of economics has been divided into two parts: microeconomics and macroeconomics. In Microeconomics we study the economic behaviour of an individual, firm or industry in the national economy. It is thus a study of a particular unit rather than all the units combined. We mainly study the following in microeconomics:

1) Product pricing 2) Consumer behaviour 3) Factor pricing 4) Economic conditions of a section of the people 5) Study of a firm and 6) Location of a industry.

In macro economics, we study the economic behaviour of the large aggregates such as the overall conditions of the economy such as total production, total consumption, total saving and total investment in it. It includes: 1) National income and output 2) General price level 3) Balance of trade and payments, 4) External value of money 5) Saving and investment and 6) Employment and economic growth.

The problem of scarcity and choice making can be depicted using the tool of production possibilities curve. The basic economic problems of what, how and for whom to produce can be solved in many ways by an economy. If it gives the whole charge of the economy, to private ownership we get capitalist economy, to public ownership we get socialist economy and jointly to private and public ownership we get mixed economy.

1.3 Nature of Economics: Is economics a science or an art?

Economics is both a science and an art. Economics is considered as a science because it is a systematic knowledge derived from observation, study and experimentation. However, the degree of perfection of economics laws is less compared with the laws of pure sciences.

An art is the practical application of knowledge for achieving definite ends. A science teaches us to know a phenomenon and an art teaches us to do a thing. For example, there is inflation in Pakistan. This information is derived from positive science. The government takes certain fiscal and monetary measures to bring down the general level of prices in the country. The study of these fiscal and monetary measures to bring down inflation makes the subject of economics as an art.

1.4 Philosophy of economics

The philosophy of economics concerns itself with conceptual, methodological, and ethical issues that arise within the scientific discipline of economics.

Philosophical reflection on economics is ancient, but the conception of the economy as a distinct object of study dates back only to the 18th century. Aristotle addresses some problems that most would recognize as pertaining to economics mainly as problems concerning how to manage a household. Scholastic philosophers addressed ethical questions concerning economic behaviour, and they condemned usury - that is, the taking of interest on money. With the increasing importance of trade and of nation-states in the early modern period, 'mercantilist' philosophers and pamphleteers addressed questions concerning the balance of trade and the regulation of the currency. There was an increasing recognition of the complexities of the financial management of the state and of the possibility that the way that the state taxed and acted influenced the production of wealth.

In the early modern period, those who reflected on the sources of a country's wealth recognized that the annual harvest, the quantities of goods manufactured, and the products of mines and fisheries depend on facts about nature, individual labour and enterprise, and state and social regulations. Trade also seemed advantageous, at least if the terms were good enough. It took no conceptual leap to recognize that manufacturing and farming could be improved and that some taxes and tariffs might be less harmful to productive activities than others. But to formulate the idea that there is such a thing as "the economy" with regularities that can be investigated requires a bold further step. In order for there to be an object of

inquiry, there must be regularities in production and exchange; and for the inquiry to be non-trivial, these regularities must go beyond what is obvious to the producers, consumers, and exchangers themselves. Only in the eighteenth century, most clearly illustrated by the work of Cantillon (1755), the physiocrats, David Hume, and especially Adam Smith, does one find the idea that there are laws to be discovered that govern the complex set of interactions that produce and distribute consumption goods and the resources and tools that produce them.

Crucial to the possibility of a social object of scientific inquiry is the idea of tracing out the unintended consequences of the actions of individuals. Thus, for example, Hume traces the rise in prices and the temporary increase in economic activity that follow an increase in currency to the perceptions and actions of individuals who first spend the additional currency (1752). In spending their additional gold imported from abroad, traders do not intend to increase the price level. But that is what they do nevertheless. Adam Smith expands and perfects this insight and offers a systematic Inquiry into the Nature and Causes of the Wealth of Nations. From his account of the demise of feudalism to his famous discussion of the invisible hand, Smith emphasizes unintended consequences.

One can distinguish the domain of economics from the domain of other social scientific inquiries either by specifying some set of causal factors or by specifying some range of phenomena. But since so many different causal factors are relevant to the study of production or consumption, from the laws of thermodynamics and metallurgy to the laws governing digestion, economics cannot be distinguished from other inquiries only by the phenomena it studies. Some reference to a set of central causal factors is needed. Thus, for example, John Stuart Mill maintained that, “Political economy is concerned with such of the phenomena of the social state as take place in consequence of the pursuit of wealth. It makes entire abstraction of every other human passion or motive, except those which may be regarded as perpetually antagonising principles to the desire of wealth, namely aversion to labour, and desire of the present enjoyment of costly indulgences.” Economics is mainly concerned with the consequences of individual pursuit of wealth, though it takes some account of less significant motives such as aversion to labour.

Mill takes it for granted that individuals act rationally in their pursuit of wealth and luxury and avoidance of labour, rather than in a disjointed or erratic way, but since he does not have a theory of consumption, he develops no explicit theory of rational economic choice. Such theories were developed only in the wake of the so-called neoclassical revolution, which linked choice (and price) of some object of consumption not to its total utility but to its marginal utility. For example, nothing could be more useful than water. But in much of the world water is plentiful enough that another glass more or less matters little to an agent. So water is cheap. Early “neoclassical” economists such as Jevons held that agents make consumption choices so as to maximize their own happiness (1871). This implies that they distribute their expenditures so that a dollar's worth of water or porridge or upholstery makes the same contribution to their happiness. The “marginal utility” of a dollar's worth of each good is the same.

In the Twentieth Century, economists stripped this general theory of rationality of its hedonistic clothing. Rather than supposing that all consumption choices can be ranked in terms of the extent to which they promote an agent's happiness, economists focused on the ranking itself. All that they suppose concerning evaluations is that agents are able consistently to rank the alternatives they face. This is equivalent to supposing first that rankings are complete — that is, for any two alternatives x and y , either the agent ranks x above y (prefers x to y), or the agent prefers y to x , or the agent is indifferent. Second, economists suppose that agent's rankings of alternatives (preferences) are transitive. Though there are

further technical conditions to extend the theory to infinite sets of alternatives and to capture further plausible rationality conditions concerning gambles, economists generally subscribe to a view of a rational agent as possessing complete and transitive preferences and as choosing among the feasible alternatives whatever he or she most prefers. Attempts have also been made in the theory of revealed preference to eliminate all reference to subjective preference or to define preference in terms of choices .

In clarifying the view of rationality that characterizes economic agents, economists have for the most part continued to distinguish economics from other social inquiries by the content of the motives or preferences with which it is concerned. So even though an agent may for example seek happiness through asceticism or may rationally prefer to sacrifice all his or her worldly goods to a political cause, economists have supposed that such preferences are rare and unimportant to economics. What economists are concerned with are the phenomena deriving not just from rationality, but from rationality coupled with a desire for wealth and larger consumption bundles.

Economists have flirted with a less substantive characterization of individual motivation and with a more expansive view of the domain of economics. In his influential monograph, *An Essay on the Nature and Significance of Economic Science*, Lionel Robbins defined economics as “the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses”. According to Robbins, economics is not concerned with production, exchange, distribution, or consumption as such. It is instead concerned with an aspect of all human action. Although Robbins' definition helps one to understand efforts to apply economic concepts, models, and techniques to other subject matters such as the analysis of voting behaviour and legislation, it seems evident that economics maintains its connection to a traditional domain.

Economics has been of philosophical interest in three main regards. First, it raises moral questions concerning freedom, social welfare and justice. Although economists often deny that their theories have ethical content, they are ready with advice about how to make life better. Markets, which are the central institutions with which economics traditionally has been concerned, involve voluntary interactions, yet they are simultaneously mechanisms that regulate individual activities and allocate goods to people. They thus raise intricate moral questions concerning coercion, voluntary action, and social justice.

Second, contemporary theoretical economics is largely a theory of rational choice. This may seem surprising, since economics is supposed to be an explanatory and predictive science of the actual interactions among people rather than a normative discipline studying how people ought rationally to choose, but it is indeed a fact. This fact joins the interests of economists to the interests of those philosophers concerned with rational choice.

Third, economics raises important questions in philosophy of science. In part this is because all significant cognitive enterprises raise questions for epistemology or philosophy of science. But orthodox theory is of particular methodological interest for seven reasons.

1. Positive and normative: The extent to which economics appears to be permeated with normative concerns raises methodological questions about the relationships between a positive science (“of what is”) and a normative science (“of what ought to be”). The standard view is that the positive science of

economics, like engineering, helps policy makers to choose means to accomplish their ends, but that it has no bearing on the choice of ends itself. This view is questionable, because economists have to interpret and articulate the incomplete specifications of goals and constraints provided by policy makers.

2. Reasons and causes: It is of philosophical interest that orthodox theoretical economics is as much a theory of rational choices as it is a theory that explains and predicts economic outcomes. Although economists are more interested in the aggregate results of individual choices than in the choices themselves, their theories offer both causal explanations for why individuals choose as they do and accounts of the reasons for their choices. Embedded within orthodox economics is a specific variant of “folk psychology”, and orthodox economics provides a specific context in which to question whether folk-psychological explanations in terms of reasons can also be causal explanations.

3. Naturalism: Of all the social sciences, economics most closely resembles the natural sciences. Economic theories have been axiomatized, and essays and books of economics are full of theorems. Of all the social sciences, only economics boasts a Nobel Prize. Economics is thus a test case for those concerned with the extent of the similarities and differences between the natural and social sciences.

4. Abstraction and idealization: Economics raises questions concerning the legitimacy of severe abstraction and idealization. For example, economic models often stipulate that everyone is perfectly rational and has perfect information or that commodities are infinitely divisible. Such claims are exaggerations, and they are clearly false. Can good science make such false claims?

5. Ceteris paribus clauses: Because economists attempt to study economic phenomena as constituting a separate domain, influenced only by a small number of causal factors, the claims of economics are true only ceteris paribus -- that is, they are true only if there are no interferences or disturbing causes. What are ceteris paribus clauses, and when if ever are they legitimate in science?

6. Causation: Many important generalizations in economics make causal claims. For example, the law of demand asserts that a price increase will (ceteris paribus) diminish the quantity demanded. Yet economists are wary of causal language because of its suggestion that outcomes have single causes and because of difficulties integrating talk of causation and talk of equilibrium mutual determination. Econometricians have also been deeply concerned with the possibilities for determining causal relations from statistical evidence and with the relevance of causal relations to the possibility of consistent estimation of parameter values.

7. Structure and strategy: During the past generation philosophers of science have been concerned to comprehend the larger theoretical structures that unify and guide research within particular research traditions or research programmes. Since orthodox economics is very systematically unified, though not in quite the way that Kuhn (1970) or Lakatos (1970) discuss, it poses interesting puzzles about what guides research. Since the success of orthodox economics is controversial, this “research tradition” also poses questions about how unified and constrained research ought to be.

These are the seven most significant philosophical issues concerning neoclassical economic theory, and many of these issues arise concerning all schools of economics.

1.3 Fields of Economics

Economists organize their discipline in fields from agricultural economics to urban economics. The fields are in two sets: Those that develop core skills and those that emphasize application of the skills in specific settings. The core itself involves two modes of analysis. The Skills page gives simple examples. First, mathematical description of economic phenomena allows derivation of relationships. This mode of thought is called economic theory. Mathematics allows arguing by deductive reasoning from stated premises to a conclusion. It offers the internal consistency of mathematical proofs but requires no evidence of applicability.

The second core method looks for evidence based on observing economic phenomena. It draws inference from persistent patterns. A consistent pattern that is distinct from the complexity and randomness in nature is likely to have meaning. This mode of thought is called inductive reasoning. It is the mode of analysis of economic historians, statisticians, and experimenters. The study of formal methods for drawing inferences from statistical evidence in economics is called econometrics.

The fields of economics, then, are more signposts than fences. They include the core areas of mathematical and statistical methods as well as the many arenas in which the core methods are applied. Most undergraduate Programs include study in the core fields and in a selection of applied fields. The standard classification of economic fields given below appears in the *Journal of Economic Literature*. These field labels provide enduring markers on the terrain of economic thought.

A). General Economics and Teaching -- The principles course in the economics curriculum develops core ideas. The course also provides the big picture of how individual economic events fit together to shape aggregate outcomes. Mastering basic ideas and getting a sense of how the parts fit into the whole is an essential entry point to the study of other fields and more advanced ideas in economics. The A category also includes discussion of the teaching of economics.

B). Schools of Economic Thought and Methodology -- Economists who study the history of economic thought investigate how the core ideas in economics have developed.

C). Mathematical and Quantitative Methods -- Econometricians develop methods to measure economic phenomena. They apply the scientific method by formulating hypotheses, gathering evidence, and judging whether the evidence is consistent with the hypotheses. Mathematical economists develop tools for finding optimal solutions to economic problems and advance ideas in game theory. Game theory is the method for analyzing how one player chooses strategies in light of knowledge of the possible strategies a rival might choose. Game theory is used to analyze many economic phenomena including the interaction between firms. In recent decades, experimental economists have tested economic theories in laboratories and in the field.

D). Microeconomics -- Studying how markets function and the role of prices is of central concern in understanding economics. Investigation of the behavior of individual households, firms, and prices and quantities of specific products like automobiles is called microeconomics. Behavioral economists study the cognitive and emotional dimensions of economic decisions.

E). Macroeconomics and Monetary Economics -- The actions of individuals sum to the total activity in a whole economy. In the aggregate, the total amount of products consumed by households and firms must equal the total amount produced. The total amount firms pay to workers and investors must equal the amount households receive in income. Study of the aggregate relationships in an economy is called macroeconomics. Economic growth, the role of money and interest rates, and changes in the overall level of prices and the aggregate level of unemployment are central concerns of macroeconomics.

F). International Economics -- International economists study trade among nations and the flow of finance across international borders. Globalization and the deficit in the U.S. balance of payments with other countries are current concerns.

G). Financial Economics -- Financial economists study the process of saving and investing with a specific concern for how individuals and firms deal with risk.

H). Public Economics -- Public finance economists consider the role of government in the economy. Some focus on evaluating government programs and others focus on the design of tax systems. Public finance economists are also interested in how the political process makes decisions. Issues of national security and defense appear here as well the study of state and local governments.

I). Health, Education, and Welfare -- Some economists focus on the markets and government policies that directly shape access to health care. Others focus on schools and educational policies. Still others consider the economic circumstances of the poor and evaluate alternative government programs to improve the well-being of the poor.

J). Labor and Demographic Economics -- Labor economists study employers' decisions to hire workers and employees' decisions to work. They study how wages are set, the nature of incentives workers face, and the role of minimum wage laws, unions, pensions plans, and training programs. They are also interested in the formation of families, determinants of birth rates, migration, population change, and aging.

K). Law and Economics -- Some economists use the tools of economics to study the incentives for human behavior that are defined by the legal system. Property rights, for example, are essential for markets to work well but they can be defined in a variety of ways that have different effects on the well-being of people.

L). Industrial Organization -- IO is the study of individual markets, the nature of competition, and the role of prices. Some economists study issues in anti-trust policy. Others study the role of advertising, pricing policies, and how costs vary with the scale of operations. Some IO economists investigate particular industries such as appliances, software, and electricity. In the last decade a number of economists have studied economic issues in sports, recreation, and tourism.

M). Business Administration and Business Economics, Marketing, Accounting --Business economists study decisions made by firms. How do firms maximize profit? What prices should they set and how much should they produce? What is the role of incentives within the firm, of entrepreneurship, and leadership?

N). Economic History -- Economic historians explore changes in economic well-being and how economic institutions have developed. The emergence of markets, the forces shaping the industrial revolution, the sources of improvements in agricultural productivity, the influence of railroads and other new technologies provide perspective on current economic issues.

O). Economic Development, Technical Change, and Growth -- Economists who are interested in the development of economies often focus on third world countries. Why have some countries developed while others have not? How might the industrialized countries improve the prospects for development around the world? Who gains and who loses with industrialization?

P). Economic Systems -- Analysts compare the capital market system to the various forms of socialism and the transition from centrally planned to more market-based economic systems. Economists sometimes address issues in specific countries like China, Cuba, and Poland.

Q). Agricultural and Natural Resource Economics, Environmental and Ecological Economics -- Economists study farming, fishery, and forests with a focus on prices, markets, and changing technologies. Natural resource economists study markets for energy (oil, coal, and electricity) and mineral resources. Economists have played an important role in the evolution of policies to promote clean air, water, and land.

R). Urban, Rural, and Regional Economics -- Economists analyze the location decisions of households and firms and the associated issues in housing, transportation, and local government.

S). Miscellaneous Categories -- Data, dissertations, and book reviews are classified here.

T). Other Special Topics -- Other special topics include the economics of the arts, religion, and culture.

1.4: Economics and ethics

Most economists would insist that one distinguish between positive and normative economics, and most would argue that economics is mainly relevant to policy because of the information it provides concerning the consequences of policy. Yet the same economists who so sharply distinguish positive and normative economics will often turn around and offer their advice concerning how to fix the economy. In addition, there is a whole field of normative economics.

Economic outcomes, institutions, and processes may be better or worse in several different ways. Some outcomes may make people better off. Other outcomes may be less unequal. Others may restrict individual freedom more severely. Economists typically evaluate outcomes exclusively in terms of welfare. This does not imply that they believe that only welfare is of moral importance. They focus on welfare, because they believe that economics provides a particularly apt set of tools to address questions of welfare and because they believe or hope that questions about welfare can be separated from questions about equality, freedom, or justice. As sketched below, economists have had some things to say about other dimensions of moral appraisal, but welfare takes centre stage. Indeed normative economics is called 'welfare economics.'

1.4.1. Welfare

One central question of moral philosophy has been to determine what things are intrinsically good for human beings. This is a central question, because all plausible moral views assign an important place to individual welfare or well-being. This is obviously true of utilitarianism (which hold that what is right maximizes total or average welfare), but even non-utilitarian views must be concerned with welfare, if they recognize the virtue of benevolence, or if they are concerned with the interests of individuals or with avoiding harm to individuals.

There are many theories of well-being, and the prevailing view among economists themselves has shifted from hedonism (which takes the good to be a mental state such as pleasure or happiness) to the view that welfare is the satisfaction of preferences. Unlike hedonism, taking welfare to be the satisfaction of preference specifies how to find out what is good for a person rather than committing itself to any substantive view of a person's good. Note that equating welfare with the satisfaction of preferences is not equating welfare with any feeling of satisfaction. If welfare is the satisfaction of preferences, then a person is better off if what he or she prefers comes to pass, regardless of whether that occurrence makes the agent feel satisfied.

1.4.2. Efficiency

Economists have instead explored the possibility of making welfare evaluations of economic processes, institutions, outcomes, and policies without making interpersonal comparisons. Consider two economic outcomes S and R, and suppose that some people prefer S to R and that nobody prefers R to S. In that case S is “Pareto superior” to R, or S is a “Pareto improvement” over R. Without making any interpersonal comparisons, one can conclude that people's preferences are better satisfied in S than in R. If there is no state of affairs that is Pareto superior to S, then economists say that S is “Pareto optimal” or “Pareto efficient.” Efficiency here is efficiency with respect to satisfying preferences rather than minimizing the number of inputs needed to produce a unit of output or some other technical notion.

1.4.3. Other directions in normative economics

Although welfare economics and concerns about efficiency dominate normative economics, they do not exhaust the subject, and in collaboration with philosophers, economists have made a wide variety of important contributions to contemporary work in ethics and normative social and political philosophy. In addition economists and philosophers have been working on the problem of providing a formal characterization of freedom so as to bring tools of economic analysis to bear. Others have developed formal characterizations of equality of resources, opportunity, and outcomes and have analyzed the conditions under which it is possible to separate individual and social responsibility for inequalities. John Roemer has put contemporary economic modelling to work to offer precise characterizations of exploitation. Amartya Sen and Martha Nussbaum have not only developed novel interpretations of well-being in terms of capabilities, but Sen has linked them to characterizations of egalitarianism and to operational measures of deprivation.

1.5 Relevance of Economics

About the importance of economics Malthus says, “Political economy is perhaps the only science of which it may be said that the ignorance of it is not merely a derivation of good but produce great positive evil.”

Following are the main advantages of the study of economics.

- 1) For the producer: Economics is very useful for the producer. It guides him that how he should combine the four factors of production and minimize the cost of production.
- 2). For the consumer: The consumer can adjust his expenditure of various goods in better way if he knows the principles of economics. He will spend his income according the law of Equi-Marginal utility in order to get maximum satisfaction.
- 3). Solving economic problems: It helps in removing the poverty from the country. Developing countries are facing many problems like unemployment , over population low per capita income and low production. Economics is very useful in solving these problems.
- 4). Leaders of nations: Its study is helpful for the leaders to understand the economic problems if they have a knowledge of Economics.
- 5). Finance minister: Finance minister prepares the yearly budget of the country. Economics guides him that how he should frame the tax policy and monetary policy.
- 6). For the distribution of the national income : From the study of economics one can easily judge that how the income should be distributed among the four factors of production. For this purpose Marginal productivity theory is suggested by economics.

- 7). Cultural value: A person's education can not be considered complete unless he has some knowledge of economics. The events which happen daily around us have an important economic bearing. So there is also the cultural value of the study of economics.
- 8). Common man: The study of economics is very useful for every citizen. It enables him to understand and criticize the economic policies of the government. He can also guide the government.
- 9). Economic planning: In the modern age the importance of economic planning can not be ignored. Through planning we can utilize our natural resources in better way and can improve our economic condition.
- 10). Importance of labour : It guides the workers that how they can get maximum wages from the employer. It enables them to get the right of trade union , collective bargaining and fixation of working hours.
- 11). Solution for economic crisis: It guides the nations that how they can save themselves from the economic crises. The advanced countries desire is that there should be economic stability and full employment without inflation to achieve these objectives, economics is very useful for them.
- 12). Inspiration for development :The study of advanced countries economy inspires the less development countries that they can also improve their economics conditions.
- 13). Intellectual value: Economics has great intellectual value, because it broadens our out-look, sharpens our intellect and inculcate in us the habit of balanced thinking.
- 14). Optimum use of resources: In the many countries there is a lot of wastage of resources. The study of economic development will enable them to make the optimum use of their resources.
- 15). Creates the sense of responsibility: Economics develop the sense of responsibility among the citizens by explaining the various problems and their solutions.
- 16). Useful for international trade : Its study is very useful for international trade. It helps the importers and exporters to earn maximum profit. A businessman can easily understand the trade policies of various countries.

1.6 Economic Analysis

Economic analysis is a process whereby the strengths and weaknesses of an economy are analyzed. Economic analysis is important in order to understand the exact condition of an economy.

Macroeconomics and Economic Analysis: Macroeconomic issues are important aspects of the economic analysis process. However, economic analysis can also be done at a microeconomic level. Macroeconomic analysis gives insight into the fundamentals of an economy - and the strengths and weaknesses of economies. Macroeconomic analysis takes into account growth achieved by aar economy, or rather a sector of that economy. It tries to reveal reasons behind a particular economic phenomenon like growth or reversal of the economy.

Inflation and Economic Analysis: Many countries in the world are plagued by rising inflation. Economic analysis tells us why inflation has taken place. It also suggests ways in which the rate of inflation could be reduced, so that economic development could continue.

Economic Analysis and Government Policies: Government policies and plans that affect the economy have always been an important part of economic analysis. Since policies and plans adopted by a particular government are responsible for shaping an economy, they are always closely scrutinized by various processes of economic analysis.

Economic Ratings and Economic Analysis: Economic ratings are another important aspect of economic analysis, as it provides an accurate picture of how an economy is faring compared to others.

Economic Analysis and Comparison of Economic Policies: It is a good way to analyze an economy by comparing its policies with those of other economies. This is all more applicable in the case of economies that are of similar types, for example developing economies.

1.7 Economic methodology and social studies of science

Throughout its history, economics has been the subject of sociological as well as methodological scrutiny. Many sociological discussions of economics, like Marx's critique of classical political economy, have been concerned to identify ideological distortions and thereby to criticize particular aspects of economic theory and economic policy. Since every political program finds economists who testify to its economic virtues, there is a never-ending source of material for such critiques.

The influence of contemporary sociology of science and social studies of science, coupled with the difficulties methodologists have had making sense of and rationalizing the conduct of economics, have led to a sociological turn within methodological reflection itself. Rather than showing that there is good evidence supporting developments in economic theory or that those developments have other broadly epistemic virtues. Many methodologists and historians have argued that these changes reflect a wide variety of non-rational factors, from changes in funding for theoretical economics, political commitments, personal rivalries, attachments to metaphors, or mathematical interests.

Furthermore, many of the same methodologists and historians have argued that economics is not only an object of social inquiry, but also as a tool of social inquiry. By studying the incentive structure of scientific disciplines and the implicit or explicit market forces impinging on research (including of course research in economics), it should be possible to write the economics of science and the economics of economics itself.

1.8. Methodenstreit

Methodenstreit is a German term referring to an intellectual controversy or debate over epistemology, research methodology, or the way in which academic inquiry is framed or pursued. More specifically, it also refers to a particular controversy over the method and epistemological character of economics carried on in the late 1880s and early 1890s between the supporters of the Austrian School of Economics, led by Carl Menger, and the proponents of the (German) Historical School, led by Gustav von Schmoller. On an intellectual level the Methodenstreit was a question of whether there could be a science, apart from history, which could explain the dynamics of human action. The Historical School contended that economists could develop new and better social laws from the collection and study of statistics and historical materials, and distrusted theories not derived from historical experience. Thus, the German Historical School focused on specific dynamic institutions as the largest variable in changes in political economy. The Historical School were themselves reacting against materialist determinism, the idea that human action could, and would (once science advanced enough), be explained as physical and chemical reactions. The Austrian School by contrast believed that economics was the work of philosophical logic and could only ever be about developing rules from first principles - seeing human motives and social interaction as far too complex to be amenable to statistical analysis - and purporting their theories of human action to be universally valid.

1.9 Nature of Economic Laws:

Economics, like all other sciences, has drawn its own set of generalizations or laws. Economic laws are nothing more than careful conclusions and inferences drawn with the help of reasoning or by the aid of observation of human and physical-nature. In everyday life, we see man is always busy in satisfying his unlimited wants with limited means. In doing so, it acts upon certain principles. These principles or generalizations which an average man usually follows when he is engaged in economic activity are named "*Economic Laws*".

Economic laws are the statements of general tendencies. In the words of **Marshall**: “Economic laws are those social laws which relate to branches of conduct, which the strength of motive chiefly concerned can be measured by money prices”.

(1) Laws of economics are less exact. The *nature of economic laws* is that they are less exact as compared to the laws of natural sciences like Physics, Chemistry, Astronomy, etc. An economist cannot predict with surety as to what will happen in future in the economic domain. He can only say as to what is likely to happen in the near future.

(2) Economic laws are essentially hypothetical. Economic laws, writes Seligman, are essentially hypothetical. They are true under certain given conditions. If these conditions are fulfilled, the conclusions drawn from them will be true and exact as those of the laws of physical sciences. From this statement that laws of economics are hypothetical, we should not conclude that, they are useless or unreal. In the words of **Samuelson** writes “Despite the approximate character of economics laws, it is blessed with many valid principles”.

(3) Economic laws qualitative or quantitative. Laws of economics are qualitative in nature. They are not exactly stated in quantitative terms. They tell the direction of change which is expected rather than the amount of change. For example, according to the law of demand, the quantity demanded varies inversely with price. We do not say that 10% rise in price will lead to 30% fall in the quantity demanded.

4) Applies on the average in normal conditions. Economic laws do not deal with any particular individual, firm, commodity etc. It takes an average economic unit and lays down its economic behavior.

(5) Laws of economics are more exact than the laws of other social sciences. We do admit that the laws of economics are not 100% exact. They are, however, more exact than the laws of any other social science.

1.10 Methods of Economic Analysis:

An economic theory derives laws or generalizations through two methods: (1) Deductive Method and (2) Inductive Method. These two ways of deriving economic generalizations are now explained in brief:

(1) Deductive Method of Economic Analysis:

The deductive method is also named as analytical, abstract or prior method. The deductive method consists in deriving conclusions from general truths, takes few general principles and applies them draw conclusions. For instance, if we accept the general proposition that man is entirely motivated by self-interest. In applying the deductive method of economic analysis, we proceed from general to particular. The classical and neo-classical school of economists notably, Ricardo, Senior, Cairnes, J.S. Mill, Malthus, Marshall, Pigou, applied the deductive method in their economic investigations.

Merits of Deductive Method:

The main merits of deductive method are as under:

(i) This method is near to reality. It is less time consuming and less expensive. (ii) The use of mathematical techniques in deducing theories of economics brings exactness and clarity in economic analysis. (iii) There being limited scope of experimentation, the method helps in deriving economic theories. (iv) The method is simple because it is analytical.

Demerits of Deductive Method:

It is true that deductive method is simple and precise, underlying assumptions are valid. (i) The deductive method is simple and precise only if the underlying assumptions are valid. More often the assumptions turn out to be based on half truths or have no relation to reality. The conclusions drawn from such assumptions will, therefore, be misleading. (ii) Professor Learner describes the deductive method as 'armchair' analysis. According to him, the premises from which inferences are drawn may not hold good at all times, and places. As such deductive reasoning is not applicable universally. (iii) The deductive method is highly abstract. It requires a great deal of care to avoid bad logic or faulty economic reasoning. As the deductive method employed by the classical and neo-classical economists led to many facile conclusions due to reliance on imperfect and incorrect assumptions, therefore, under the German Historical School of economists, a sharp reaction began against this method. They advocated a more realistic method for economic analysis known as inductive method.

(2) Inductive Method of Economic Analysis:

Inductive method which also called empirical method was adopted by the "Historical School of Economists". It involves the process of reasoning from particular facts to general principle. This method derives economic generalizations on the basis of (i) Experimentations (ii) Observations and (iii) Statistical methods.

In this method, data is collected about a certain economic phenomenon. These are systematically arranged and the general conclusions are drawn from them.

For example, we observe 200 persons in the market. We find that nearly 195 persons buy from the cheapest shops, Out of the 5 which remains, 4 persons buy local products even at higher rate just to patronize their own products, while the fifth is a fool. From this observation, we can easily draw conclusions that people like to buy from a cheaper shop unless they are guided by patriotism or they are devoid of commonsense.

Merits of Inductive Method:

(i) It is based on facts as such the method is realistic. (ii) In order to test the economic principles, method makes statistical techniques. The inductive method is, therefore, more reliable. (iii) Inductive method is dynamic. The changing economic phenomenon are analyzed and on the basis of collected data, conclusions and solutions are drawn from them. (iv) Induction method also helps in future investigations.

Demerits of Inductive Method:

The main weaknesses of this method are as under:

(i) If conclusions drawn from insufficient data, the generalizations obtained may be faulty. (ii) The collection of data itself is not an easy task. The sources and methods employed in the collection of data differ from investigator to investigator. The results, therefore, may differ even with the same problem. (iii) The inductive method is time-consuming and expensive.

The above analysis reveals that both the methods have weaknesses. We cannot rely exclusively on any one of them. Modern economists are of the view that both these methods are complimentary. They partners and not rivals. Alfred Marshall has rightly remarked: "Inductive and Deductive methods are both needed for scientific thought, as the right and left foot are both needed for walking". We can apply any of them or both as the situation demands.

Module II

Micro Economics and Macro Economics

Micro Economics and Macro Economics - National Income concepts Potential GNP - Actual GNP - GDP Gap – Green GNP Macro - Economic Models – Exogenous, Endogenous, ex-ante, ex-post, Nominal, real, dependent and independent variables – Identities and Equations.

Economics is the branch of knowledge that studies about the behaviour of individuals and their activities. In doing so, the discipline focuses upon the *economic factors* that influence the behaviour and activities. Specifically, economics studies about the behaviour of economic units (like households, firms). Such a study can be conducted by focussing upon the ‘individual’ activity or by considering the *aggregate aspects* of activities of all individuals together.

Broadly speaking, the first one is called as the micro economic study and the second one is called as the macroeconomic study. *Specifically, micro economics studies and explains the behaviour of individual economic units where as macro economics studies and predicts the behaviour of economic variables in aggregate form like aggregate consumption, employment etc.* The study of individual decision maker (household, firm) and the economic choices that he faces are the starting blocks of micro economic enquiry. On the other hand, macroeconomics visualises relationships among aggregate variables and explores the consequences as the aggregate variables interacts each other.

Aggregate activity is the result of activities of individual economic units. Then why should we need a separate macroeconomic study as microeconomics attempts to study about the behaviour and activities of individual economic units? The reason is that many a times even the best decisions, from the viewpoint of individual economic units, may not result in best results for the society as a whole.

Another view regarding the distinction between micro and macro economics is provided by the Swedish economist Axel Leijonhufvud (pronounced as *leonwood*). He argued that the fundamental difference between micro economics and macroeconomics is that the former primarily studies about the situations of full utilisation of resources whereas the latter primarily studies about the situations of underemployment and excess capacity.

Introduction of the Concepts

It is widely accepted that the Norwegian economist Ragnar Frisch in 1933 coined the terms microeconomics and macro economics. But the Austrian economist Fritz Machlup argued that the writings of Frisch only have terms like ‘micro dynamic’ and ‘macro dynamic’ even though he used them with a meaning almost near to the current meaning and usage. It is after the publication of *General Theory* by John Maynard Keynes in 1936, the term ‘macroeconomics’ became popular and the distinction between micro and macro got attention. Even though Keynes did not use these terms explicitly but, in fact, refereed to macroeconomics as the “*the theory of output and employment as a whole*” in *General Theory*.

Disconnect between Micro and Macro Economics

The disconnect between micro and macro economics many a times resulted in intense debate among economists. In fact, both attempt to study about the aspects of economic activity *but* from different viewpoints. Once Kenneth J Arrow remarked it as a “major scandal” that the neo classical price theory

which is micro economic in nature cannot explain macroeconomic phenomena like unemployment (especially the crisis of 1930s). At the same time economists like Robert Lucas and Thomas Sargent argued that Keynesian economics is “fundamentally flawed” as many of the Keynesian macroeconomic ideas do not have micro foundations (explanations). As a matter of fact, lack of ‘micro foundations’ does not by it mean that the Keynesian macroeconomic ideas could not be explained from micro economic level.

Review Questions

- 1) Distinguish clearly the terms micro and macro economics with examples.
- 2) Why do we need microeconomic and macroeconomic studies separately?
- 3) Discuss about the absence of connection between micro and macro economics.
- 4) Write a note on the origin of the concepts micro and macroeconomics.

National Income Accounting

Put simply, national income accounting (also called as social accounting) is the measurement of value of all economic activities of a nation. According to Paul Studenski who wrote the history of development of national accounts, the pre history of national accounting is located in the mercantilist period of sixteenth century. Mercantilists considered wealth of a nation consist of stock of precious metals (like gold, silver). However, it was William Petty, a British mercantilist economist and French economist Pierre Boisguillebert (pronounced as *Bos gil bert*) pioneered the first real estimates of national income.

Petty defined the “income of the people” as “annual value of labour” and “annual proceed of the stock or wealth of the nation”. Boisguillebert considered what a nation produces and exchanges as the wealth of a nation rather than the stock of precious metals or so. Later, the French Physiocrats of eighteenth century argued that agriculture was the only productive activity and hence national income is simply equal to the net product of agriculture. By the end of the eighteenth century Adam Smith pointed out that apart from the agricultural production there are many other productive activities like the production of material goods etc. and they also need to be counted. But Smith considered the activities of government employees (including the judicial men, police personnel etc) as unproductive and hence argued for their exclusion.

Karl Marx critiqued Smith’s view and argued that whether labour was productive or not was determined by the social relations of production. For instance, Marx pointed out that hotel chefs and waiters all are productive labourers as their labour is converted into capital for their employer. Hence all that labour is productive if it produces capital. However Marxian theory became problematic during 1890s when the Austrian economist Bohm Bawerk launched his famous attack (transformation problem) on Marx’s labour theory of value.

In the broader history of national accounting the distinction between productive and unproductive activities etc were considered as closed with the advent of “marginalist revolution” brought about by the writings of Italian economist Leon Walras, the British economist Stanley Jevons and the German economist Carl Menger. The British economist Alfred Marshall (also belongs to the marginal school) gave the final blow and pointed out that, "Everything that is produced in the course of a year, every service rendered, every fresh utility brought about is a part of the national wealth."

The Great Depression, Keynes' General Theory and National Accounts

The neo classical economists could not explain the reasons for the crisis and it was Keynes who first made a comprehensive explanation with the concept of aggregate demand. He argued that during a period of downturn the aggregate demand would be very low and the solution is to increase it by increasing the government expenditure.

The suggestions of Keynes required changes in economic policy (especially in the expenditure policy of the government) and this necessitated the analysis of components of aggregate demand. It eventually resulted in the conversion of time series data on national income into "national income accounts". The components of national income accounts like consumption, investment, saving, exports, wages, profits etc are considered as necessary elements to understand and analyse the behaviour and structure of the economy. However, the Russian economist Simon Kuznets' estimation of U.S. national income for 1929-1932 (published in 1934) came well ahead of the publication of *General Theory* of Keynes and was the first major attempt in the estimation of national income.

Measurement of Economic Activities

All economic activity generates income in one way or other. So its measurement can be made by simply estimating the income generated in the economy. But the competing definitions regarding what constitutes 'productive activity' make it difficult to measure economic activity through 'income measurement'. So 'national product' becomes the widely used concept in the measurement of economic activity. There is one more reason for the shift from 'national income' to 'national product'.

Keynes was concerned with the effect of financing the British war effort (Second World War) upon the economy. 'National product' involves all final capital goods produced in the economy but in the course of time some part of that capital goods get 'used up' in the process. This consumption of capital goods is called as depreciation and need not happen in the same year in which the measurement takes place. Hence the estimation of the productive capacity of a nation requires the consideration of these aspects. When depreciation is deducted from the gross national product (GNP) we get net national product (NNP) which is equal to national income.

$$\text{NNP} = \text{GNP} \textit{ minus} \text{ Depreciation}$$

The gross national product (GNP) is defined as the market value of all final goods and services produced by *residents* of a nation in a given period of time, usually a year.

If a person resides in a nation for more than 180 days in a calendar year he is considered as the resident of a nation. Such a resident need not be a citizen of the nation. Hence, GNP refers to the total income earned by the residents of a nation. But what about the total income produced but available within the nation? It is called as the gross domestic product/income (GDP).

The gross domestic product (GDP) is defined as the *market value* of all final goods and services produced within an economy in a given period of time, usually a year.

$$\text{GDP} = \text{GNP} \textit{ minus} \text{ net factor payments.}$$

Factor payments can flow *out of the* nation or *to the* nation. Hence,

$$\text{Net factor payments} = \text{Factor payments} \textit{ from} \text{ abroad} \textit{ minus} \text{ Factor payments} \textit{ to} \text{ abroad.}$$

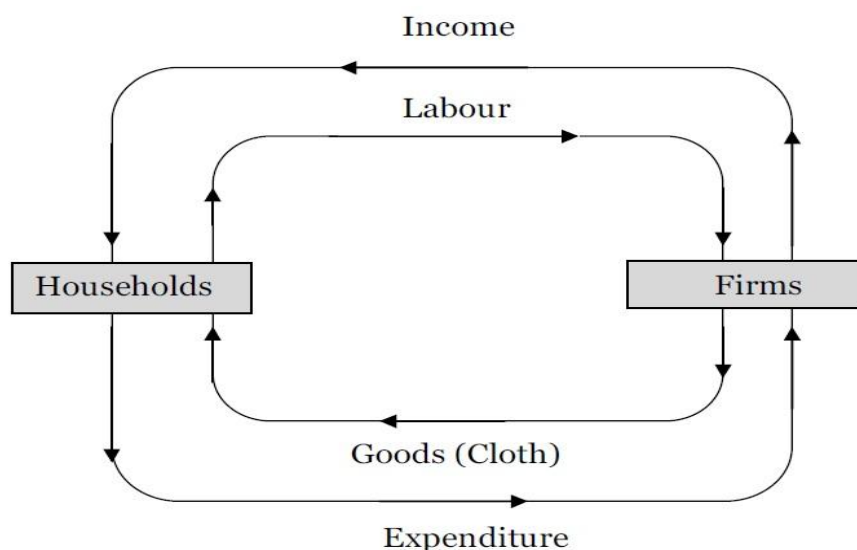
For instance, consider the ownership of an agricultural estate in India by an American citizen. The profit received by the American citizen is due to the economic activity conducted with in India but since he is an American citizen he wants to send it to America. *That means the profit so earned will be no longer available with in India for domestic use.* This withdrawal of profit from India is called as ‘factor payment to abroad’. Hence, the profit generated in the estate will be included in GNP but excluded from the GDP. (Why?) Since the profit will be send to America. Similarly if Indian citizens working in other countries send income to India it will be considered as ‘factor payments from abroad’

GDP as both Income and Expenditure

GDP can be considered as the total income available for domestic use or as the total expenditure on goods and services produced in the economy. GDP as a measure of income and expenditure is not difficult to understand. For every transaction there will be a seller and buyer. What the seller receives is income whereas what the buyer spends is expenditure and both must be equal. The idea can be better explained with the help of a diagram called as “circular flow of income”.

Circular Flow of Income

The concept was first introduced by the French economist Francois Quesnay. Quesnay was a trained surgeon and his knowledge in medical science helped him to take the example of blood circulation proved by the British physician William Harvey to explain the inter connectivity between different economic activities. The figure given below explains the circular flow for an economy with single input labour and single output cloth.



The inner loop shows the flow of labour units from the households to the firms and from firms households receive cloth. This inner loop represents the flow of goods. The outer loop represents the flow of income/expenditure. Firms give wages to the labour which becomes the income of the households. The households in turn spend this income for buying the cloth produced by the firm and hence it becomes the expenditure of the households. It is now clear that the *GDP is equal to the income received by the households from the labour and the expenditure on the purchase of cloth.*

Stocks and Flows

On the basis of nature of economic variables, they are measured *at a point of time* or by per *unit of time*. The value of some economic variables is constant over a period of time while that of the others are changing as time elapses. The former are called as stock variables and the latter are called as flow variables. For instance, GDP is a flow variable as its value changes as time elapses. If you compute the value of GDP every hour it changes as time elapse even though we do not compute like that due to the complexities involved in it. On the other hand, wealth is a stock variable. Its value will not change by every hour as what happens in the case of GDP. The value of wealth changes very slowly. Hence its value is measured *at a point of time* whereas the value of a flow variable is measured per *unit of time*. That is why GDP is often measured per year. The list of some common stock and flow variables are given below:

Stock	Flow
1) Wealth	Income, Expenditure
2) Debt	Fiscal deficit, Revenue deficit
3) Capital	Investment
4) Unemployment	Number of persons losing jobs

Measuring GDP: Points to Remember

Market Value

The definition of GDP is:

The gross domestic product (GDP) is defined as the *market value* of all final goods and services produced within an economy in a given period of time, usually a year.

Suppose the nation produces 10 kg of rice and 20 kg of wheat. A simple addition of these quantities would become a wrong calculation. That is, it is wrong to say that 30 kg of cereals represent the GDP. Rice and wheat are valued differently by the people and the calculation of GDP must reflect that. Because of that in the definition we take the market values. If the price of rice/kg and wheat/kg is Rs 12 and Rs 15 respectively the GDP will be:

$$\begin{aligned}
 &= (10 \text{ kg of rice} \times \text{Rs } 12/\text{kg}) + (20 \text{ kg of wheat} \times \text{Rs } 15/\text{kg}) \\
 &= \text{Rs. } 120 + \text{Rs. } 300 = \text{Rs } 420.
 \end{aligned}$$

Used Goods

The sale/purchase of used goods will not be considered for GDP calculation as GDP considers only the value of goods and services produced in a given year. Used goods are produced some year back and had been included in that year's GDP. Thus sale/purchase of used goods represents only transfer of assets not fresh production of income.

Inventories

Inventories mean addition to the stock of a firm. Suppose a firm produced more cloth than it could sell. Also assume that the unsold cloth has been destroyed. The workers received wages for this increased production of cloth but expenditure remains same. In such a situation the profit of the firm must fall equal to the additional wages given for the increased production. Thus income also remains same and hence there is no change in the GDP.

Consider another scenario where the additional cloth has been considered as stock for sale in future. Such addition is called as inventories. When inventories are made it is considered as *purchase by the firm itself*. Then expenditure increases. There will not be a fall in the profit of the firm and hence income also increases. As such both income and expenditure increases by the same amount and GDP also increases by the same value.

The sale of inventories by the firm in a later period is considered just as a sale of used good and so GDP will not increase. Thus, treatment of inventories ensure that the GDP will always reflect the production of goods and services in the current year or in a given year.

Intermediate Goods

Intermediate goods are goods used in the different stages of production. They can be considered as the inputs for each stage of production till the final product is released. The *wheat flour* produced by a mill is an input for the production of *bread* by a bakery and again becomes an input for a restaurant for making the *sandwich*. Similarly, a mining company that produces *iron ore* sells it to a steel factory which produces *cold rolled (CR) steel*. Iron ore becomes an input for this stage of production. Again the CR steel is purchased by an automobile factory to produce cars. If the car is purchased by a consumer for his personal use the car becomes a final good. But if the *car* is purchased by a business firm that produces PVC pipes the car becomes an input for the production of pipes and becomes an intermediate good. In short, wheat flour, bread, iron ore, CR steel, car purchased by the PVC pipe manufacturer are intermediate goods required for the production of other goods. But the car purchased for personal use is not an intermediate good, it is a final good.

Since the GDP includes the value of all *final* goods and services, the value of intermediate goods are excluded from the calculation of GDP. If we consider the value of these intermediate goods at all stages of production, it would amount to the *counting the same value several times* (sometimes called as double counting) and result it in an inflated value for the GDP.

The problem of intermediate goods can be better solved by considering the value added at each stage of production. Since GDP is the *total value* of all *final* goods and services, the *value added at each stage* of production alone need to be counted. Value added at each stage of production is found out by deducting the value of input from the value of output.

The final goods can be easily identified if they are:

- (1) purchased by the consumers (households including individuals)
- (2) purchased by the government
- (3) purchased by the business firms as investment and not as an input for further production

Imputations

Remember GDP includes the *market value* of all final goods and services. Then what happens if there is no market for a particular good or if it is not sold in the market? Such goods cannot be ignored in computing GDP. The problem is solved by *estimating the market value of such goods* and is called as the *imputed value*.

Imputed value is often computed for the rent of owner occupied houses. If a family or a business firm takes an apartment/shop space for rent that rent immediately enters into the calculation of GDP. Hence owner occupied apartment/shop space also need to be treated similarly. The rent that would have received becomes the imputed value of rent for owner occupied properties.

Imputation is applied in valuing the services of government like the services of police, judiciary, civil services etc. Since these services do not enter into a market yet takes place in public place, imputation is necessary to compute their value. The imputed value is calculated by considering the cost incurred (wages and other allowances) to provide such services.

If the same logic is extended to the self owned cars, that it gives car rental service to the owner, an imputed value for the services of the car can also be computed. But such imputations are not attempted to avoid complexities.

The output produced in the family kitchen are indeed output of the nation but are excluded from the GDP calculation simply because of the reason that such output do not enter into the market. The services of house wives are thus excluded although they engage in an important productive activity. It is for these reasons Gregory Mankiw in *Macro Economics* remarks that “GDP is an imperfect measure of economic activity”.

Again, as more and more female persons enters into the labour market the production of food in the home kitchen declines as it is difficult to find enough time for cooking. Consequently food purchased from the hotels and restaurants and ‘dining out’ increases and GDP also increases correspondingly. Actually there is no noticeable increase in food production between these two situations but GDP increases in the second situation. Bradford DeLong in *Macro Economics*, points out that from the viewpoint there is *no increase in the society’s wealth* or its output.

Other Measures of Economic Activity

Recall that we have already defined:

The gross national product (GNP) is defined as the market value of all final goods and services produced by residents of a nation in a given period of time, usually a year. _____ (1)

NNP = GNP *minus* Depreciation _____ (2)

GDP = GNP *minus* net factor payments from abroad. _____ (3)

Net factor payments = Factor payments from abroad minus Factor payments to abroad. _____ (4)

To summarise;

GNP is *National* Product

GDP is *Domestic* Product

In this context, computation of National Income considers GNP and NNP. NNP represents the market value of all final goods and services minus depreciation. Market value involves indirect business tax (or sales tax/VAT) and is received by the government. This tax amount is not realised by the firms and hence cannot be distributed as income. Recall the figure of circular flow of income. As such, national income is calculated;

National Income = NNP *minus* Indirect Business Taxes _____ (5)

It is from the national income that we find out the total *personal income* of the nation. Personal income is the total income received by the individuals (households and non-corporate businesses) of the nation. The following adjustments in the national income will give the personal income:

Personal Income =	National Income		
		<i>minus</i>	Corporate profits
			Social Insurance Contributions
			Net interest earned by the businesses
		<i>plus</i>	Dividend distributed
			Government transfers to individuals
			Personal interest income _____ (6)

The above given three items are subtracted from the national income but out of the corporate profits the companies distribute a portion of it as dividend to the share holders and is available to households. Therefore the dividend income is added. Similarly the social insurance contributions made to the government is not available for the households but the government transfers or redistributes some income to the households. Similarly, net interest earned by the businesses (involves interest payment made to the households, interest earned by the firms etc) needs to be subtracted but interest income earned by the households is to be added.

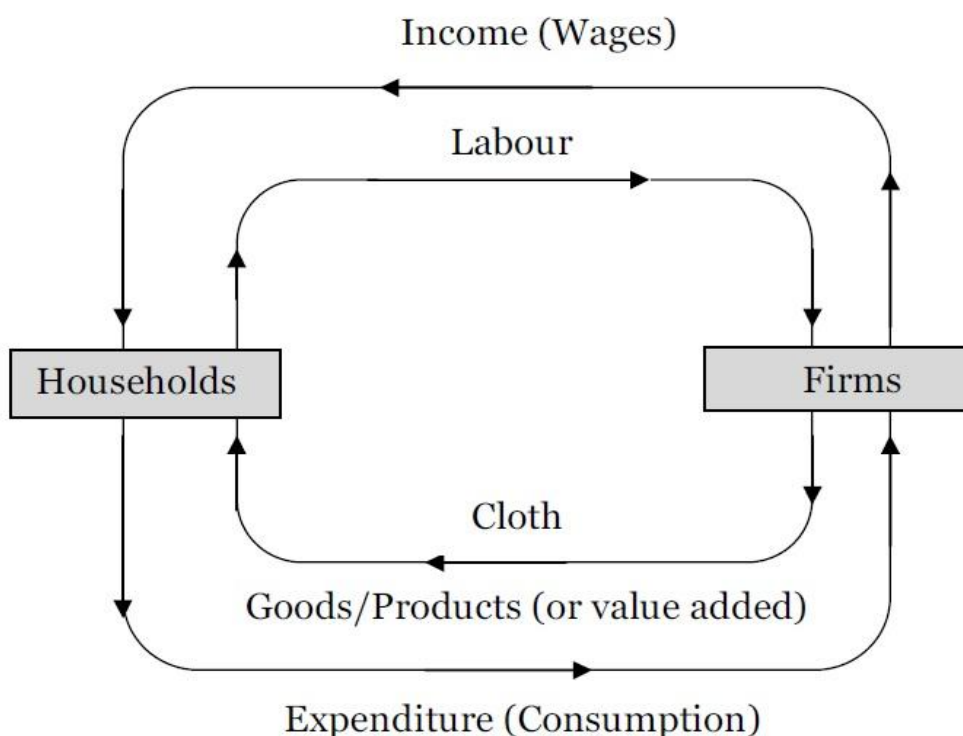
The total income available to the individuals for their own personal use is called as *disposable income* and is found out from the personal income. In fact from the personal income, the personal income tax and other non tax payments (toll, fees etc) are made and when that is subtracted from the personal income the disposable income is computed.

$$\text{Disposable Income} = \text{Personal Income}$$

$$\text{minus personal income tax and non tax payments (toll, fees etc)} \text{_____ (7)}$$

Methods of Measurement

There are three methods of measurement; income method, product or value added method and the expenditure method. In the initial phase, production of goods and services take place. During the course of production payment is made to all factors of production like wages to labour etc. Once the production completes the output is distributed for different uses like consumption etc. The different methods of measurement are better understood by observing the circular flow of income for a simple economy. The income, product and the expenditure loops of the figure given below represent these methods respectively.



GDP computed with these methods are summarised as:

1) Expenditure Method: Consumption + Investment + Government Purchases + (Exports – Imports)

$$Y = C + I + G + (X-M)$$

2) Income Method: Wages + Profits + Interest + Rent

3) Product/Value Added Method: Sum of Gross Value added by all firms

Nominal and Real Values: The Case of GDP

Recall that, the GDP is computed by considering the market value of each and every commodity produced in the nation. For instance, if the price of rice and wheat per kg is Rs 12 and Rs 15 respectively in the first year, the GDP will be:

$$\begin{aligned} &= (10 \text{ kg of rice} \times \text{Rs } 12/\text{kg}) + (20 \text{ kg of wheat} \times \text{Rs } 15/\text{kg}) \\ &= \text{Rs. } 120 + \text{Rs. } 300 \\ &= \text{Rs } 420. \end{aligned}$$

Suppose in the second year, the price of rice increased to Rs. 15/kg but the production remains same at 10 kg. The GDP will increase to Rs. 450 since it takes into account the market value. *But remember there is no increase in production.* In fact GDP must give a measure of the level of domestic production however that is not get reflected in the computation of GDP in the above manner. The problem is that the current prices are used to compute the GDP and is called as the *nominal GDP*. Instead of the nominal GDP, the *real GDP* must be computed to get a realistic measure of the level of domestic production. Real GDP measures the domestic production without considering the *rise or fall* in prices. It measures production on the basis of *constant prices* rather than current prices. Constant price means price for a particular year is chosen and is taken as fixed to compute GDP for other years.

Suppose production of rice and its price also increased to 15 kg in the second year. The nominal and real GDP will be computed as:

$$\begin{aligned} \text{Nominal GDP} &= (15 \text{ kg of rice} \times \text{Rs } 15/\text{kg}) + (20 \text{ kg of wheat} \times \text{Rs } 15/\text{kg}) \\ &= \text{Rs. } 225 + \text{Rs. } 300 \\ &= \text{Rs } 525. \end{aligned} \quad \text{(on the basis of } \textit{second} \text{ year price)}$$

$$\begin{aligned} \text{Real GDP} &= (15 \text{ kg of rice} \times \text{Rs } 12/\text{kg}) + (20 \text{ kg of wheat} \times \text{Rs } 15/\text{kg}) \\ &= \text{Rs. } 180 + \text{Rs. } 300 \\ &= \text{Rs } 480. \end{aligned} \quad \text{(on the basis of } \textit{first} \text{ year price)}$$

The relationship between Nominal GDP and Real GDP will give a measure of nominal GDP per one unit of real GDP.

$$\frac{\text{Nominal GDP}}{\text{Real GDP}} = \text{GDP Deflator}$$

Although it is called as *GDP deflator*, actually it gives a measure of *increase (inflation)* in nominal GDP with respect to real GDP. In practice, GDP is computed in nominal terms because the current market prices can be immediately used for the computation. But as pointed out above, a realistic estimation of level of domestic production by ignoring the influence of increase in prices needs computation of real GDP. The easy method to find the real GDP is to *deflate* the nominal GDP by using the so called GDP deflator. It is for its deflating purpose, the ratio of nominal to real GDP is called as GDP deflator!

$$\frac{\text{Nominal GDP}}{\text{Real GDP}} = \text{GDP Deflator}$$

$$\Rightarrow \text{GDP Deflator} \times \text{Real GDP} = \text{Nominal GDP, that is } \frac{\text{Nominal GDP}}{\text{GDP Deflator}} = \text{Real GDP}$$

Similarly, nominal and real values of any variable can be computed. The real expenditure, real investment etc all can be computed from their respective nominal values by using the appropriate deflators. *To sum up, nominal values are computed on the basis of current prices where as the real values are computed on the basis of constant prices (means price for a chosen year and consider it as fixed). Real values are important to get a realistic picture of change in the value of a variable and so have to remove the influence of price increase.*

Potential GNP, Actual GNP and GNP Gap

The concept of potential GNP got popularity after the research of US economist Arthur Okun. He was a member of ‘Council of Economic Advisors’ of US President John F Kennedy. When the council was asked to explain the benefits of reduction of unemployment from 7 % to 4 %, it was Okun who conducted the research and explained about the negative relationship between unemployment and real GNP (potential GNP). It later became the famous Okun’s Law. Okun found that for every 1% reduction in unemployment the real GNP (potential GNP) increased by 3%. As unemployment decreases, more and more people are employed and it results in a more than proportionate increase in the productive capacity of the nation. Real GNP or *potential GNP simply means* the full employment (at natural rate of unemployment) level of real output an economy can produce. *Actual GNP means* the current level of GNP produced by the nation.

The widely used actual GNP estimates and its growth rates, normally get high attention but the real standing of the economy against its potential level can be found out only by comparing the actual GNP with its Potential GNP. GNP growth rates by itself convey only little information regarding the production effort of the nation.

The difference between the potential GNP and the actual GNP is called as the GNP gap and signifies the shortfall of production effort. Hence the GNP gap can be considered as a useful measure for macroeconomic policy decisions.

Green GDP

The green GDP concept emerged out of the limitations and inadequacies of conventional GDP accounting. Since GDP is viewed as a measure of economic activity of a nation naturally it also considered as a measure for the welfare of the nation. But on both these counts criticisms are pouring upon the conventional GDP measures. When an environmental damage happens due to a chemical leakage or so (like pollution to Ganga river, Bhopal gas tragedy etc) the cleanup activities undertaken to solve the damage eventually increases the GDP. The tragedy is that the economic and environmental damage never gets accounted anywhere. In such a situation welfare of the nation will not increase but certainly fall although the GDP increases due to the cleanup activities. This is a clear limitation of the conventional GDP figures. It is in this context alternative measures of GDP are defined to take into account the environmental damage inflicted upon the economy by various economic activities. The concept of green GDP got popularity during the 1990s and later international organizations took up the matter and released many documents regarding its measurement. Simply speaking,

Green GDP = Traditional GDP *minus* environmental/ecological damage or cost.

The first green GDP calculation was made by China for the year 2004 and found that the green GDP was lower by 3% than the conventional GDP. But later China abandoned the release of green GDP figures as for many provinces the gap between these two is very high which will adversely affect the reputation.

The environment minister Sri. Jairam Ramesh has announced that in November, 2009 that India would release the green GDP figures from 2015 onwards.

Future of Green GDP

In the “Handbook of National Accounting” published in 2003 by the United Nations in association with European Commission, International Monetary Fund, Organisation for Economic Co-operation and Development and World Bank and titled as “*Integrated Environmental and Economic Accounting*” it is pointed out that adjustments in the traditional GDP accounting methods as mentioned above will not solve the problem. What is more important is the adjustment of the economic behaviour that damages the environment itself. It is pointed out that *what is required is not a “greener GDP measure”* by adjusting the national income accounting methods *but a GDP measure for a different economy which is greener* by using the same national income accounting methods. The GDP so calculated is called as the “*greened economy GDP (geGDP)*”

Macroeconomic Models

Economic model is a theoretical construct that captures the essential features, characteristics and the relationships between different set of variables of the underlying phenomena. Construction of an appropriate model will help to understand the underlying phenomena in an easy manner. It also helps theory building. But remember model is not a theory in itself.

When a model is constructed to represent a macroeconomic phenomenon it is called as a macroeconomic model. The circular flow diagram is a simplified graphical macroeconomic model of an economy. Models can also be constructed with verbal explanations and mathematical equations. The explanation of the circular flow diagram is a verbal model of the economy. But frequently, mathematical models are used to represent economic phenomena as it is easy to make further manipulations and computations. Moreover mathematical models have better precision and accuracy in representation. A simple mathematical model is a mathematical equation constructed to represent an economic phenomenon.

Consider the simple model that represents the domestic economy given by the following equation.

$$Y = C + I + G + (X - M)$$

The model explains that the domestic expenditure of the economy is comprised of consumption, investment, government purchases and net foreign trade. There can be different models to explain the same theoretical relationship between variables. For instance consider the simple econometric models that theorise the relationship between income and consumption.

$$C = \alpha + \beta.Y \quad (\text{Deterministic Model}) \quad \underline{\hspace{2cm}} \quad (1)$$

$$C = \alpha + \beta.Y + U \quad (\text{Stochastic Model}) \quad \underline{\hspace{2cm}} \quad (2)$$

Where C = Consumption expenditure

α = Intercept term (autonomous consumption)

β = Slope coefficient

Y = Monthly family income

U = Error term (represents the influence of variables other than income)

The first model explains that income as the only factor that influences consumption where as the second model explains that the consumption is influenced by not only income but by other factors also. It is obvious that the second model captures the reality in a better manner.

Exogenous and Endogenous Variables

Endogenous variables are variables whose value is determined within the model and exogenous variables are variables whose value is determined outside the model. Alternatively, endogenous variable is the variable whose value is explained by the model but for an exogenous variable the model cannot explain its value. Consider the following model:

$$C = \alpha + \beta.Y + U$$

The variable 'C' that stands for consumption expenditure is the endogenous variable as its values is determined by the model. But the value of the variable 'Y' that stands for monthly family income is supplied from outside the model. The data on monthly family income is collected through a survey. Hence it is considered as exogenous variable.

Independent and Dependent Variables

Independent variable is the variable whose value changes initially where as the dependent variable is the variable whose value changes *in response to the changes in independent variable*. Alternatively, the variable upon which the researcher introduces manipulation is called as the independent variable and the variable which is observed for the impact of this initial manipulation is called as the dependent variable. With respect to the above mentioned model, 'Y' is the independent variable and 'C' is the dependent variable. The factors that cause changes in the independent variable are not considered at all. In econometrics, the terms exogenous and endogenous variables are used interchangeably for independent and dependent variables respectively.

Ex ante and Ex post

These are Latin terms and the meaning of *ex ante* is 'before the event' and *ex post* is 'after the event'. The terms are introduced into economics by the Stockholm school during the 1920s and 1930s. It was Erick Lindahl in 1924 who first introduced the term *ex post*. A more comprehensive treatment of both these terms is given by the Nobel laureate Gunnar Myrdal in his thesis on expectations and price changes published in 1927. It is because of this reason Myrdal's name is associated with the introduction

of these terms into economics. But these terms are popularised by another Nobel laureate Bertil Ohlin with the publication of Stockholm theory of savings and investment.

The purpose of these terms is to emphasise the *time factor* in economic analysis. Myrdal used these terms to emphasise the fundamental difference between ‘foreseen’ and ‘unforeseen’ changes. Myrdal argued that expectations under uncertainty are to be analysed by including the time element in the calculation of the value of economic variables ‘before the event’ and ‘after the event’. The importance of these terms in macroeconomics is that the *divergence in the value of a variable* both *ex ante* and *ex post* due to uncertainty are often encountered and considered as one of the relevant factors for determining the level of employment.

Identities and Equations

Identities

Identities are mathematical statements or equations that are true in definitional form. Whatever be the value of the unknown quantities or variables, an identity is considered as true so long as definitional meaning is true. Identities are represented with ‘triple bar’ while equations are represented with equality sign. Consider the simple macroeconomic model explained earlier.

$$Y = C + I + G + (X-M)$$

This model becomes a true representation of the economy because of its definitional correctness. As such it is also called as the national income identity and is represented as:

$$Y \equiv C + I + G + (X-M)$$

The true numerical values of the variables in the right hand side of the identity may or may not be equal to the left hand side of the equation in a numerical sense and there can be small discrepancies. But definitionally the right hand side is equal to the left hand side and hence called as identity.

Another well known macroeconomic identity is the quantity equation of money. It is the definition of the four variables in the equation that make it true.

$$M.V \equiv P.T \quad \text{where } M = \text{Money}$$

V = Velocity

P = Price

T = Transactions

Equations

On the other hand equations are mathematical statements that emphasises the equality between two mathematical expressions. *An equation is true only for particular values of the variables in the equation.* Unlike identities, variables cannot take any values to keep the equation true. The values of these variables are found out by solving the equation. The unknown quantities or variables are represented by the last letters of the alphabet like w, x, y and z. Consider the following equation.

$$28 = 2z + 10$$

Note that the equation is true only for a particular value of ‘z’.

Suggested Readings:

1. Diwedi DN ‘Macroeconomics Theory and Policy’ Tata McGraw-Hill
2. Edward Shapiro : ‘Macro economics’ Oxford University press.
3. Gregory Mankiw : ‘Macro economics’ – 6th Edn. Tata McGraw Hill.

Module III

Classical Macro Economic Model

Say's Law of Markets – Wage – Price Flexibility – Classical Model of Output and Employment – Quantity Theory of Money – Fisher's Equation of Exchange – Cash Balance Approach – Neutrality of Money – Money illusion – Pigou effect – Real Balance effect – Classical dichotomy – Concept of full employment – voluntary unemployment.

Classical Economics

The term "classical economics" was coined by Karl Marx to refer to the economics of David Ricardo and James Mill and their predecessors. However, the usage was subsequently extended to include the followers of Ricardo. The term Classical economics refers to work done by a group of economists in the eighteenth and nineteenth centuries. They developed theories about the way markets and market economies work. The study was primarily concerned with the dynamics of economic growth. It stressed economic freedom and promoted ideas such as laissez-faire and free competition. Famous economists of this school of thought included Adam Smith, David Ricardo, Thomas Malthus and John Stuart Mill and J.B.Say.

The Classical Theory

The fundamental principle of **the classical theory** is that the economy is self-regulating. Classical economists maintain that the economy is always capable of achieving the natural level of real GDP or output, which is the level of real GDP that is obtained when the economy's resources are *fully employed*. While circumstances arise from time to time that cause the economy to fall below or to exceed the natural level of real GDP, **self-adjustment mechanisms** exist within the market system that work to bring the economy back to the natural level of real GDP. The classical doctrine—that the economy is always at or near the natural level of real GDP—is based on two firmly held beliefs: **Say's Law** and the belief that prices, wages, and interest rates are flexible. The classical approach to macro economics is that individuals and firms act in their own best interest. The wages and prices adjust quickly to achieve equilibrium in the free market economy. Classical macroeconomics is the theory and the classical model of the economists Adam Smith, David Ricardo, John Mills and Jean Baptiste Say.

Assumptions of the classical macroeconomics

The Classical theories made a number of assumptions about the markets and their competitiveness.

1. There is freedom of entry and exit. No monopoly elements are present in the market to prevent newcomers from entering the market or stopping the present ones from quitting the market.
2. Prices and wages are flexible in both upward and downward directions according to the demand and supply forces.
3. No single seller or buyer of a product has sufficient market power to influence the industry price, nor does any supplier or purchaser of labor services have sufficient market power to influence the market wage rate.
4. Thus all economic agents are price-takers and not price-setters.
5. The markets are competitive and so disequilibrium can only exist for a short period of time.

6. The prices and the wages are changing and flexible. So, if for some reason the product market were experiencing excess demand in some industry, with quantity demanded greater than quantity supplied, prices would rise until quantity demanded once again equaled quantity supplied. The rise in price returns the market to equilibrium.
7. Wages and prices are flexible and hence if there were an excess supply of workers, wages would decline until equilibrium in the labor market were restored.
8. There is full employment in the economy.
9. All economic decision-makers are assumed to be operating by having all the information they needed to make the best decisions.

As a result of the above assumptions, a prediction of the classical system is that it essentially operates at full employment on a long-run equilibrium path over time. While in the short run unemployment can result, it can't exist permanently because wage rates fall when there is excess supply of labor. As workers compete for jobs, then by the law of demand, wage rates fall and the quantity of labor services hired by firms increases. Alternately, if there were a labor shortage, the wage rate would rise as firms compete for workers. The classical model incorporates the notion that the economy is on a long-run moving equilibrium path, and any deviations from long run equilibrium are not permanent because wage and price flexibility can remove excess demands or excess supplies.

Say's Law of Markets

John-Baptiste Say (1767-1832) is one of the most important and insightful thinkers in the history of economic science. Say was a major proponent of Adam Smith's self-directing economic system of competition, natural liberty, and limited government. J.B. Say was the original supply-sider and documented that production is the source (reason) of consumption and placed supply over demand in the hierarchy of economics. A person's ability to demand goods and services from others proceeds from the income produced by his own acts of production. His level of production determines his ability to demand. Demanding products requires money which, in turn, requires a prior act of supply. The production of goods causes income to be paid to those who produce. In other words, a person sells his labor services or assets for money which he then uses to demand products. In the end, when exchanges have been effected, it will be found that a person has paid for goods and services with other goods and services. The demand for any commodity is a function of the supply of other commodities. Thus, Say's law, or the law of market, is an economic principle of classical economics. Say's law is based upon the fact that every production of goods also creates incomes equal to the value of goods produced and these incomes are spent on purchasing these goods. In other words, production of goods itself creates its own purchasing power. Therefore, Say's law is expressed as "Supply creates its own demand". In other words, the supply of goods produced creates demand for it equal to its own value with the result that the problem of general overproduction does not arise. Say's law was generally accepted throughout the 19th century. Say's Law of Markets, a key component of the classical school of economics, describes the process through which supplies in general are translated into demands in general. For Say, the balance between aggregate supply and aggregate demand is an *ex ante* identity. From this perspective, supply equals demand only because of, and to the amount of, people's demand for other goods. Demand is supply seen from another angle. Because supply is demand there cannot be an excess of supply over demand. The demand for products can be said to be rooted in the production of products.

Thus, according to Say's Law supply creates its own demand, i.e., the very act of producing goods and services generates an amount of income equal to the value of the goods produced. Say's Law can be easily understood under barter system where people produced (supply) goods to demand other equivalent goods. So, demand must be the same as supply. Say's Law is equally applicable in a modern economy. The circular flow of income model suggests this sort of relationship. For instance, the income created from producing goods would be just sufficient to demand the goods produced.

(b) Saving-Investment Equality: There is a serious omission in Say's Law. If the recipients of income in this simple model save a portion of their income, consumption expenditure will fall short of total output and supply would no longer create its own demand. Consequently there would be unsold goods, falling prices, reduction of production, unemployment and falling incomes.

However, the classical economists ruled out this possibility because they believed that whatever is saved by households will be invested by firms. That is, investment would occur to fill any consumption gap caused by savings leakage. Thus, Say's Law will hold and the level of national income and employment will remain unaffected.

(c) Saving-Investment Equality in the Money Market: The classical economists also argued that capitalism contained a very special market – the money market – which would ensure saving investment equality and thus would guarantee full employment. According to them the rate of interest was determined by the demand for and supply of capital. The demand for capital is investment and its supply is saving. The equilibrium rate of interest is determined by the saving-investment equality. Any imbalance between saving and investment would be corrected by the rate of interest. If saving exceeds investment, the rate of interest will fall. This will stimulate investment and the process will continue until the equality is restored. The converse is also true.

What Say stated was that the supply of a good constitutes demand for everything that is not that good. Aggregate supply thus creates its own aggregate demand. Within the context of a free market system, the supply of each producer makes up his demand for the supplies of other producers. Therefore, in the aggregate, demand always equals supply and the general overproduction of goods is meaningless and impossible. According to Say, it was possible to have a surplus or a shortage of any specific commodity. Production can be misdirected and too much of some products can be produced for which there is insufficient demand. He said that gluts of production did not occur through general overproduction, but instead through overproduction of certain goods in proportion to others which were under produced. Say thus admits that there can be short-term gluts of a particular commodity. The market, left to its own devices, permits such imbalances to be corrected through adjustments of prices and costs. Any disequilibrium in the economy exists only because the internal proportions of output differ from the proportions preferred by consumers and not because production is excessive in the aggregate. It follows that overproduction or a glut can only take place temporarily when too many means of production are applied to one type of product and not enough to others. This type of disequilibrium is normally quickly remedied in a free market economy as market incentives and rational self-interest lead to adjustments in production, prices, marketing strategies, and so on. People have a rational self-interest in correcting their errors.

According to Say, savings is beneficial and it is used in the production of capital goods or in additional production. When production exceeds consumption, the difference is savings, which goes toward the production of investment goods, which are the basis for future growth. There will be no deficiency in aggregate demand as long as savings are reinvested in productive uses. Say argued that savings searching for profits goes quickly into investments for production. Say contended that money is a neutral mechanism through which aggregate supply is transformed into aggregate demand. He viewed money as an intermediate good that enables people to buy. In Say's system, money serves chiefly as a medium of exchange and was not explicitly identified as a store of wealth. He viewed inflation as a monetary phenomenon rather than the result of excessive employment and economic growth. Say viewed interest rates as the price of credit. He understood that market-determined interest rates perform the function of a market clearing price for money.

Assumptions of the Say's Law of Market:

The classical model is based mainly on the following four assumptions:

- (i) **Pure competition exists.** No single buyer or seller of commodity or an input can affect its price.
- (ii) **Wages and prices are flexible.** The wages and prices of goods are free to move to whatever level the supply and demand dictates.
- (iii) **Self interest.** People are motivated by self interest. The businessmen want to maximize their profits and the households want to maximize their economic well being.
- (iv). **No government interference.** There is no necessity on the part of the government to intervene in the business matters.

Say's Law states that in a market economy, goods and services are produced for exchange with other goods and services. That is to say, the total supply of goods and services in a market economy will equal the total demand derived from consumption during any given time period. In other words, "general gluts cannot exist" although there may be local imbalances, with gluts in one market balanced by shortages in others. Nevertheless, for some neoclassical economists, Say's Law implies that economy is always at its full-employment level. Say's law implies that there cannot be a general glut, so that a persistent state in which demand is generally less than productive capacity and high unemployment results, cannot exist. Keynesians argued that the Great Depression demonstrated that Say's law is incorrect. Keynes, in his General Theory, argued that a country could go into a recession because of "lack of aggregate demand".

Say's Law in a Barter Economy

According to say, supply creates its own demand. This is explained as according to say, whatever is produced in the barter economy is sold out. Hence nothing remains unsold and there is no possibility of over production. As a result, there is no possibility of general unemployment. For example, if a person produces cloth while the other produce the wheat, they both exchange with one another. Hence nothing will remain unsold and no producer will face losses. Consequently, there will be no unemployment. In the barter economy people produced goods either for their own use or to exchange them with the other goods. So in this process there is an aggregate demand as well as aggregate supply. Under this mechanism, it is the value of good which clears the market. If the price of one good is higher than that of another good, the resources will shift from the production of low value good to the production of high value good. In this way the value of the good will fall where the resources are moving and value of the good will rise where from the resources are coming out. In this way equalization process starts till equilibrium value is settled in the market.

Say's Law in a Money Economy

It is not easy to say what exactly Say's law says about the role of money apart from the claim that recession is not caused by lack of money. The phrase "products are paid for with products" is taken to mean that Say has a barter model of money. One can read Say as stating simply that money is completely neutral, although Say did not state that explicitly.

To Say, as with other Classical economists, it is quite possible for there to be a glut (excess supply, market surplus) for one product, and it co-exists with a shortage (excess demand) for others. But there is no "general glut" in Say's view, since the gluts and shortages cancel out for the economy as a whole. But what if the excess demand is for *money*, because people are hoarding it? This creates an excess supply for all products, a general glut. Say's answer is simple – there is no reason to engage in hoarding money. According to Say, the only reason to have money is to buy products. It would not be a mistake, in his view, to treat the economy as if it were a Barter economy. However, in classical economics, there was no reason for persistent depressions, such as that of the 1930s, in a free market according to *laissez-faire* principles. The flexibility of markets under *laissez faire* allows prices, wages, and interest rates to adjust to abolish all excess supplies and demands.

During the worldwide Great Depression, in the first half of the 20th century, a school of economics arose that disputed Say's conclusions, called Keynesian economics. The debate between classical economics and Keynesian economics continues today. The need to offer a good to demand another good is obvious in a barter economy but also applies in a money economy. The whole of neoclassical equilibrium analysis implies that Say's law in the first place functioned to bring a market into this state – Say's law is the mechanism through which markets. Thus, Say's law says that free markets can solve the economy's problems automatically. Some proponents of Say's law argue that such intervention is always counterproductive. Consider Keynesian-type policies aimed at stimulating the economy. Increased government purchases of goods (or lowered taxes) merely "crowds out" the private sector's production and purchase of goods. According to Keynes, the implication of Say's "law" is that a free-market economy is always at full employment.

Keynes versus Say

For Keynes, the decision to save is not automatically coordinated with the amount of investment needed and desired by businessmen. He says that whether or not entrepreneurs and businessmen invest depends upon a number of subjective and irrational psychological factors instead of simply depending on the availability of savings at a low interest rate. According to Keynes, too much savings in the economy is the cause of the unemployment of resources. He contended that the Say's system was only true in the special case when savings equals investment. He says that, because this is rarely the case, economists need a general theory to explain unemployment. Keynes believed that the breakdown of Say's Law came about because of a lack of aggregate demand which results from the disequilibrium of planned savings and planned investment. For Keynes, savings can be too high or too low. Either way, he considers savings to be dangerous, self-defeating, and the source of the problem. According to Keynes, savings is a destructive "leakage" from the economy. In the end, Keynes concludes that (1) when savings are less than investment, government action is necessary to stimulate investment and (2) when savings are greater than investment, government action is needed to encourage consumption expenditures. In both cases, it is up to the government to step in.

Propositions and Implications of the Law

1. Full Employment in the Economy

The law is based on the proposition that there is full employment in the economy. Increase in production means more employment to the factors of production. Production continues to increase until the level of full employment is reached. Under such a situation the level of production will be optimum.

2. Proper Utilisation of Resources

If there is full employment in the economy, idle resources will be properly utilised which will further help to produce more and generate more income.

3. Perfect Competition

Say's Law of market is based on the proposition of perfect competition in labour and product markets. Other conditions of perfect competition are given below:

- a. **Size of the Market** – According to Say's Law, the size of the market is large enough to create demand for goods. Moreover, the size of the market is also influenced by the forces of demand and supply of various inputs.
- b. **Automatic Adjustment Mechanism** – The law is based on this proposition that there is automatic and self adjusting mechanism in different markets. Disequilibrium in any market is a temporary situation. For instance, in capital market, the equality between saving and investment is maintained by rate of interest while in the labour market the adjustment between demand and supply of labour is maintained by the wage rate.
- c. **Role of Money as Neutral** – The law is based on the proposition of a barter system where goods are exchanged for goods. But it is also assumed that the role of money is neutral. Money does not affect the production process.

4. Laissez Faire Policy

The law assumes a closed capitalist economy which follows the policy of laissez faire. The policy of laissez faire is essential for an automatic and self-adjusting process of full employment equilibrium.

5. Saving as a Social Virtue

All factor income is spent in buying which they help to produce. Whatever is saved is automatically invested for further production. In other words, saving is a social virtue.

CRITICISM OF SAY'S LAW

1. Supply does not Create its Demand

Say's law assumes that production creates market for goods. Therefore, supply creates its own demand. But this proposition is not applicable to modern economics where demand does not increase as much as production increases. It is also not possible to consume only those goods which are produced within the economy.

2. Self-Adjustment not Possible

According to Say's Law, full employment is maintained by an automatic and self adjustment mechanism in the long run. But Keynes had no patience to wait for the long period for he believed that "In the long run we are all dead." It is not the automatic adjustment process which removes unemployment. But unemployment can be removed by increase in the rate of investment.

3. Money is not Neutral

Say's Law of market is based on a barter system and ignores the role of money in the system. Say believes that money does not affect the economic activities of the market. Conversely, Keynes has given due importance to money. He regards money as a medium of exchange. Money is held for income and business motives. Individuals hold money for unforeseen contingencies while businessmen keep cash in reserve for future activities.

4. Over Production is Possible

Say's Law is based on the proposition that supply creates its own demand and there cannot be general over production. But Keynes does not agree with this proposition. According to him, all income accruing to factors of production is not spent but some fraction out of it is saved which is not automatically invested. Therefore, saving and investment are always not equal and it becomes the problem of overproduction and unemployment.

5. Underemployment Situation

Keynes regards full employment as a special case for the reason that there is underemployment in capitalist economies. This is since the capitalist economies do not function according to Say's Law and supply always exceeds its demand. For example millions of workers are prepared to work at the current wage rate and even below it, but they do not find work.

6. State Intervention

Say's Law is based on the existence of laissez faire policy. But Keynes has highlighted the need for state intervention in the case of general overproduction and mass unemployment. Laissez faire, in fact led to the Great Depression, had the capitalist system been automatic and self adjusting. This would not have occurred. Keynes therefore advocated state intervention for adjusting supply and demand within the economy through fiscal and monetary measures.

MONEY WAGES AND REAL WAGES

The amount of wages paid in money is called money wages. It is also called nominal wages. Thus, the total amount of money earned by a person as wages during a certain period is called money wages.

The term real wages refers to wages that have been adjusted for inflation. This term is used in contrast to nominal wages or unadjusted wages. Real wages provide a clearer representation of an individual's wages. Thus real wages are wages in terms of goods and services the money wages will buy.

$$\text{Real Wage} = \text{Money Wage} / \text{General Price Level}$$

WAGE-PRICE FLEXIBILITY

The classical economists generally assumed full-employment. The cornerstone of classical automatic full employment was their deep faith in the downward flexibility of money wages and prices. According to them, unemployment is caused by wages being too high. Hence, the remedy for unemployment lies in lowering the wage rates. According to the classical, the basic determinant of the volume of employment is the level of wages. In a free market economy, the free working of the market forces of demand and supply for labour determines market wage rate which avoids the possibility of unemployment. If there is unemployment, the market wage rate would fall till the supply of labour is equal to the demand for labour and full employment is restored. Thus, the classical economists believed that there was always full employment in the economy and in case of unemployment, a general cut in money wages will result in full employment in the economy. The idea that a general cut in money wages will lead the economy to full employment was mainly suggested by A.C.Pigou. According to him, in a competitive economy, when money wages are reduced, the cost of production will be lowered. This would lower the prices of products. When prices fall, demand increases and sales will increase and increased sales will increase employment resulting in full employment. The classical belief was based on the assumption that changes in money wages are related directly and proportionately to real wages. So when money wage rate is reduced, the real wage is also reduced to the same extent. Consequently, unemployment is reduced and full employment prevails.

The Classical View of the Labor Market

Classical economists assumed the labor market was similar to the goods market in that price would adjust to ensure that quantity demanded equaled quantity supplied. When demand would increase, the price of labor (the wage rate) would also increase. This would increase quantity supplied (the number of workers or hours worked) and quantity demanded of labor. Conversely, a decrease in the demand for labor would depress wages and the units of labor supplied would decrease. The demand for labour by firms decreases at higher wage rates whereas households the supply of labour will increase at higher

wage rates. In other words, at higher wage rates, people that were formerly not in the labour force will be lured into working by higher wages. Conversely, at low wage rates, more people will choose not to participate in the labor force. In the classical view of the labor market, all unemployment is voluntary. When the economy goes into a recession and the demand for labour falls, the wage rate will decline and people will opt out of the labor force.

WAGE-PRICE FLEXIBILITY AND FULL -EMPLOYMENT

The Classical economists proved the validity of full employment. According to them, the amount of production which the business firms can supply does not depend only on aggregate demand or expenditure but also on the prices of products. If the rate of interest temporarily fails to bring about equality between saving and investment and as a result deficiency of aggregate expenditure arises, even then the problem of general over-production and unemployment will not arise. This is because they thought that the deficiency in aggregate expenditure would be made up by changes in the price level. When due to the increase in the savings of the people, the expenditure of the people declines; it will then affect the prices of products. As a result of fall in aggregate expenditure or demand, the prices of products would decline and at reduced prices their quantity demanded will increase and as a result all the quantity produced of goods will be sold out at lower prices. In this way, they expressed the view that in spite of the decline in aggregate expenditure caused by the increase in savings, the real output, income and employment will not fall provided the fall in prices of products is proportionate to the decline in aggregate expenditure. They believed that a free-market capitalist economy actually works in that way. Owing to the intense competition between the sellers of products as a consequence of the fall in expenditure, the prices will decline. This is because when aggregate expenditure on goods or demand for them declines, the various sellers and producers reduce the prices of their products so as to avoid the excessive accumulation of stocks of goods with them. Hence, according to the classical logic, increased saving will bring down the prices of products and not the amount of production and employment. But now a question arises to what extent the sellers or producers will tolerate the decline in prices. However, to make their business profitable they will have to reduce the prices of the factors of production such as labour. With a fall in wages of labour, all workers will get employment. If some workers do not want to work at reduced wages, they will not get any job or employment and therefore will remain unemployed. But, according to classical economists, those workers who do not want to work at lower wages and thus remain unemployed are only voluntarily unemployed. This voluntary unemployment is not real unemployment. According to the classical thought, it is involuntary unemployment which is not possible in a free-market capitalist economy. All those workers who want to work at the wage rate determined by market forces will get employment.

During the period 1929-33 when there was a great depression in capitalist economies, a renowned neoclassical economist Pigou suggested a cut in wage rates in order to remove huge and widespread unemployment prevailing at that time. According to him, the cause of depression or unemployment was that the Government and trade unions of workers were preventing the free working of the capitalist economies and were artificially keeping the wage rates at high levels. He expressed the view that if the wage rates were cut down, the demand for labour would increase so that all would get employment. It was at this time that J.M. Keynes challenged the classical theory and put forward a new theory of income and employment. He brought about a fundamental change in economic thought regarding the determination of income and employment in a developed capitalist economy. Therefore, it is often said that Keynes brought about a revolution in our economic theory.

KEYNES'S CRITICISM OF THE CLASSICAL VIEW

Keynes did not accept the classical view that reduction in money wages led to full employment. He emphasized that unemployment could be removed by raising the effective demand. According to Keynes, a cut in money wages applied to the economy as a whole reduces employment rather than increasing it. According to Keynes, when money wages are reduced in the economy, they will reduce money incomes of the workers who will reduce their demand for products. Total expenditure will fall and lead to a decline in effective demand and employment.

Classical theory of interest

The Classical theory of interest defines the rate of interest as the element that equates savings and investment. Here investment is nothing but the demand for investible resources and savings is their supply. The rate of interest that is determined by the interaction of investment and savings is the price of the investible resources.

Criticism of the Classical Theory of Interest

1. The fact that the demand for capital, the effect of interest on savings out of a fixed income level are all given, there should be a strong correlation between the interest rate and the income level.
2. If the interest rate, the demand for capital and the sensitivity of the marginal propensity to save to a change in the interest rate are all given then the income level would be the factor that would equate savings with investment.
3. Again according to the classical theory, if the demand curve for capital shifts or both shift, then the new equilibrium rate of interest would be determined at the new point of intersection. This concept is criticised to be totally wrong since the constancy of income does not tally with the notion that the two curves shift independent of each other. The shift of either of the two curves would change the income level and hence the entire assumption of fixed income level breaks down.

CLASSICAL THEORY OF EMPLOYMENT AND OUTPUT DETERMINATION

In this unit, we examine briefly the Classical view of Full employment and how employment and output are determined according to classical economists.

The Classical Theory

The Classical economists generally include economists like Adam Smith, Ricardo, Mill, Marshall and Pigou. The fundamental principle of the classical theory is that the economy is self-regulating. Classical economists maintain that the economy is always capable of achieving the natural level of real GDP or output, which is the level of real GDP that is obtained when the economy's resources are *fully employed*. While circumstances arise from time to time that cause the economy to fall below or to exceed the natural level of real GDP, self-adjustment mechanisms exist within the market system that work to bring the economy back to the natural level of real GDP. The classical doctrine—that the economy is always at or near the natural level of real GDP—is based on two firmly held beliefs: Say's Law and the belief that prices, wages, and interest rates are flexible.

Classical Assumptions

The classical economics is based upon the following assumptions:

1. There is a state of full employment.
2. There is perfect competition in the product and labour markets.
3. There is closed laissez faire economy.
4. Supply always creates its own demand.
5. There is perfect wage –price flexibility.
6. The quantity of money is given.
7. Money acts only as a medium of exchange.

Classical View of Full Employment

Full employment is a condition of the national economy, where all or nearly all persons willing and able to work at the prevailing wages are able to work. The simplest definition of full employment is that it is a situation in the economic system characterized by the absence of involuntary unemployment. It is also defined as absolutely 0% rate of unemployment or as the level of employment rates when there is no cyclical unemployment. It is defined by economists as being an acceptable level of natural unemployment above 0%. The absolute full employment in the sense of providing jobs to the entire labour force may not be possible because of the immobility of the workers from one industry to another or from one place to another. Thus, there may be a continuous existence of surplus manpower in some of the labour markets while others may have shortages of manpower. So long as the margins of unemployment are matched by equivalent labour shortages elsewhere in the economy, the employment may be assumed to be full.

Thus, full employment is compatible with the existence of some unemployment which is frictional in character and arises due to factor immobilities, temporary layoffs caused by seasonal nature of employment. The involuntary unemployment is caused by the excess supply of labour over the demand for it. The 20th century British economist William Beveridge stated that an unemployment rate of 3% was full employment. Other economists have provided estimates between 2% and 13% as full employment depending on the country, time period, and the various economists' political biases. An alternative, more normative, definition would see "full employment" as the attainment of the *ideal* unemployment rate, where the types of unemployment that reflect labor-market inefficiency (such as structural unemployment) do not exist. Only some *frictional* unemployment would exist, where workers are temporarily searching for new jobs. For example, Lord William Beveridge defined "full employment" as where the number of unemployed workers equaled the number of job vacancies available. Full employment does not mean that there is 'zero unemployment', but rather that all of the people willing and able to work have jobs at the current wage rate. Full employment is the quantity of labour employed when the labour market is in equilibrium.

The Relationship between Employment and Output

The classical neutrality proposition implies that the level of real output will be independent of the quantity of money in the economy. We consider what determines real output. A key component of the classical model is the short-run production function. In general terms at the micro level a production function expresses the maximum amount of output that a firm can produce from any given amounts of factor inputs. Classical full employment equilibrium is perfectly compatible with the existence of

frictional and voluntary unemployment, but does not admit the possibility of involuntary unemployment. The increase in production during short period becomes essentially a function of increased inputs of factor services like labour (N), capital (K) and land (L).

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

Given the above aggregate production function, the variations in the factor inputs may increase the output either in the same proportion, or in a greater or lesser proportion. However for the economic system as a whole, the level of output in the short period varies directly with the input of labour, while the inputs of capital and natural resources (land) remain constant.

THE CLASSICAL THEORY OF EMPLOYMENT (Determination of the Level of Employment and Output)

The basic contention of classical economists was that if wages and prices were flexible, a competitive market economy would always operate at full employment. That is, economic forces would always be generated so as to ensure that the demand for labour was always equal to its supply. In the classical model the equilibrium levels of income and employment were supposed to be determined largely in the labour market. At lower wage rate more workers will be employed. That is why the demand curve for labour is downward sloping. The supply curve of labour is upward sloping because the higher the wage rate, the greater the supply of labour.

In the following figure the equilibrium wage rate (w_0) is determined by the demand for and the supply of labour. The level of employment is OL_0 .

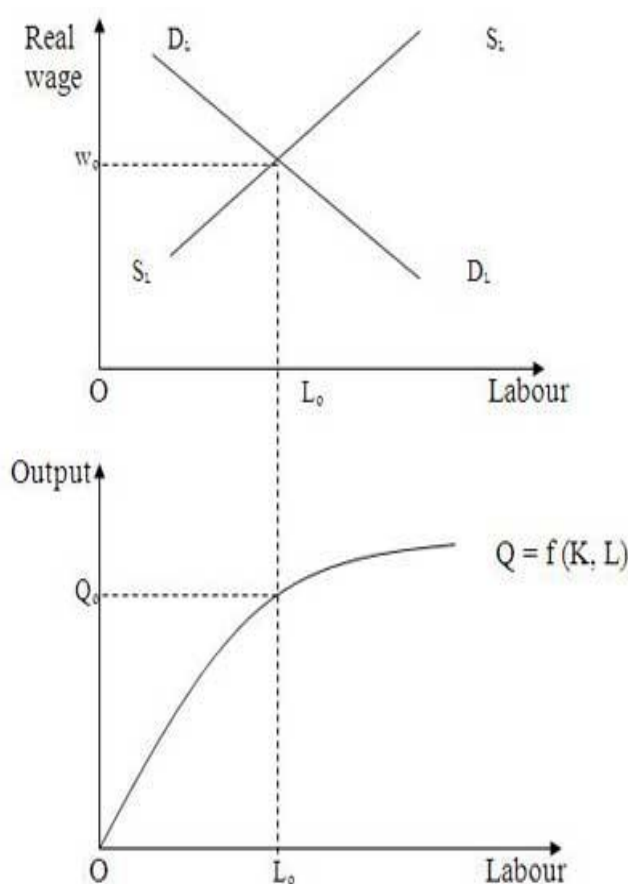


Figure 3.1 Determination of Employment

The lower panel of the diagram shows the relation between total output and the quantity of the variable factor (labour). It shows the short-run production function which is expressed as $Q = f(K, L)$, where Q is output, K is the fixed quantity of capital and L is the variable factor labour. Total output Q_0 is produced with the employment of L_0 units of labour. According to classical economists this equilibrium level of employment is the 'full employment' level. So the existence of unemployed workers was a logical impossibility. Any unemployment which existed at the equilibrium wage rate (W_0) was due to frictions or restrictive practices in the economy in nature.

The classical economists believed that aggregate demand would always be sufficient to absorb the full capacity output Q_0 . In other words, they denied the possibility of under spending or overproduction. This belief has its root in Say's Law. According to Say's Law supply creates its own demand, i.e., the very act of producing goods and services generates an amount of income equal to the value of the goods produced.

There is a serious omission in Say's Law. If the recipients of income in this simple model save a portion of their income, consumption expenditure will fall short of total output and supply would no longer create its own demand. Consequently there would be unsold goods, falling prices, reduction of production, unemployment and falling incomes. However, the classical economists ruled out this possibility because they believed that whatever is saved by households will be invested by firms. That is, investment would occur to fill any consumption gap caused by savings leakage. Thus, Say's Law will hold and the level of national income and employment will remain unaffected.

The classical economists also argued that capitalism contained a very special market – the money market – which would ensure saving investment equality and thus would guarantee full employment. According to them the rate of interest was determined by the demand for and supply of capital. The demand for capital is investment and its supply is saving. The equilibrium rate of interest is determined by the saving-investment equality. Any imbalance between saving and investment would be corrected by the rate of interest. If saving exceeds investment, the rate of interest will fall. This will stimulate investment and the process will continue until the equality is restored. The converse is also true.

Price Flexibility: The classical economists further believed that even if the rate of interest fails to equate saving and investment, any resulting decline in total spending would be neutralized by proportionate decline in the price level. That is, Rs 100 will buy two shirts at Rs 50, but Rs 50 will also buy two shirts if the price falls to Rs 25. Therefore, if households saves more than firms would invest, the resulting fall in spending would not lead to decline in real output, real income and the level of employment provided product prices also fall in the same proportion.

Wage Flexibility: The classical economists also believed that a decline in product demand would lead to a fall in the demand for labour resulting in unemployment. However, the wage rate would also fall and competition among unemployed workers would force them to accept lower wages rather than remain unemployed. The process will continue until the wage rate falls enough to clear the labour market. So a new lower equilibrium wage rate will be established. Thus, involuntary unemployment was logical impossibility in the classical model.

THE CLASSICAL THEORY OF FULL EMPLOYMENT

The classical theory is the theory of full employment. It outlines a model which ensures equilibrium at full employment. The equilibrium levels of aggregate output and employment are determined by the aggregate production function and the demand and supply of labour. The aggregate production function postulates a positive relationship between output and employment. A higher level of output is associated with a higher level of employment.

$$Q = f(N, \bar{K}, \bar{T})$$

where q denotes the level of output, N is the level of employment and \bar{K} and \bar{T} represent the fixed stock of capital and technology respectively. The demand function of labour is derived from the aggregate production function. As employment increases, the output also increases, the marginal physical product of labour (MP_L) declines. Marginal physical product of labour curve which incidentally is the demand curve for labour, will thus have a negative slope. Any business firm, hiring workers, will provide employment to labour up to an extent where the real wages paid out to the workers become equal to the marginal physical product of labour. The essential condition for profit-maximisation on the part of a firm, thus, is :

$$WP = MP_L$$

Since the demand for labour is determined by the MPL which diminishes with an increase in output and employment and the real wage (W/P) equals the MPL , the demand for labour is also a function of real wages

$$DL = f(W/P)$$

The demand function of labour varies inversely with the real wage rates.

On the supply side, it may be pointed out that work involves strain, exertion and sacrifice of leisure. This makes additional work-load or a large number of labour-hours quite disagreeable to the workers and is generally known as the marginal disutility of labour. Unless this disutility of work is neutralized through the payments of additional real wages, the workers cannot be induced to put in additional labour input. Thus the supply of labour-hours is related positively to the real wages of the workers.

$$S_L = g(W/P)$$

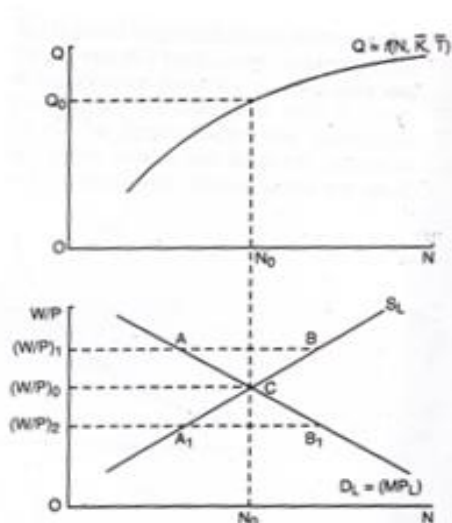


Figure 3.2 Determination of Employment and Output

Given the demand and supply functions of labour, it is possible to determine the equilibrium level of employment, when the demand for labour gets equalized with the supply of labour at the equilibrium real wage rate $(W/P)_0$. If the real wage rate $(W/P)_1$ is higher than this equilibrium rate, the labour supply will be in excess of the demand for labour, denoting a state of unemployment among the workers and initiating a tendency among the workers to bid down the wages for securing more job opportunities. The decline of real wages will reduce the unemployment gap and there would be a tendency towards the achievement of equilibrium at full employment (N_0) . If the real wage, on the other hand, is lower than the equilibrium wage rate, say $(W/P)_2$, the employers will like to absorb more workers. But the workers will be reluctant to take up the jobs offered by the employers, since the disutility of work is more in proportion to the real wages. Consequently, the employers will have to raise real wages in order to hire more workers. The equilibrium is determined ultimately at the full employment level N_0 . At $(W/P)_1$ real wage rate, there is an unemployment gap equal to AB which tends to be wiped out by the competition among the workers for more jobs and the equilibrium at $(W/P)_0$ wage rate is finally determined at N_0 full employment level. At a lower real wage rate $(W/P)_2$, there is an over-employment gap equivalent to $A_1 B_1$ which denotes a state of excess demand for labour. This will push up the wage rate and tend it to approximate to $(W/P)_0$.

The equilibrium level of employment N_0 represents a state of full employment. It is presumed that all the persons who are willing and able to work at $(W/P)_0$ wage rate have been absorbed, except a very small proportion of the frictionally unemployed labour force. At $(W/P)_0$ equilibrium real wage rate which is perfectly consistent with the marginal product of labour, if a certain number of workers are not willing to work, it will clearly mean that these people do not offer their services voluntarily and the level of employment existing in the economy denotes full employment of the employable workers. In the classical system, the unemployment and over-employment gaps tend to be automatically adjusted, over time, through the adjustment mechanism manifest in the wage-flexibility. Any lapse from full employment, assuming the price level to be unchanged would be easily overcome in this system through the variations in wage rates.

Classical System without Saving and Investment

The classical system of full employment equilibrium involves adjustments of the variables in labour market, goods market and money market. The goods market gives the aggregate production function, which indicates different levels of output at different inputs of labour, assuming the stock of capital and technique of production to be given in the short period. The demand for and supply of labour in the labour market determine the equilibrium level of employment, which in the classical system, always coincides with the state of full employment. The money market explains the determination of the price level. The supply function of money determines the price level quite independent of the levels of labour inputs and output.

The functional relationships involved in the three market classical system without saving and investment are given below:

$$\begin{aligned}
 Q &= f(N, \bar{K}, \bar{T}) && \text{(i)} \\
 DL &= f(S/P) && \dots\text{(ii)} \\
 SL &= f(W/P) && \dots\text{(iii)} \\
 MV &= PQ && \dots\text{(iv)}
 \end{aligned}$$

The classical system of full employment equilibrium not involving the saving and investment has been shown in Figure 3.3.

In part (iii) of Figure 3.3, MV is money supply function which is a rectangular hyperbola, since the quantity theory relation $MV = PQ$ holds all along the curve. It relates the level of output and price. Given the level of output Q_0 (which remains constant by assumption), there can only be one relevant price level P_0 . Part (iv) of the figure represents the price-wage adjustments, $(W/P)_0$

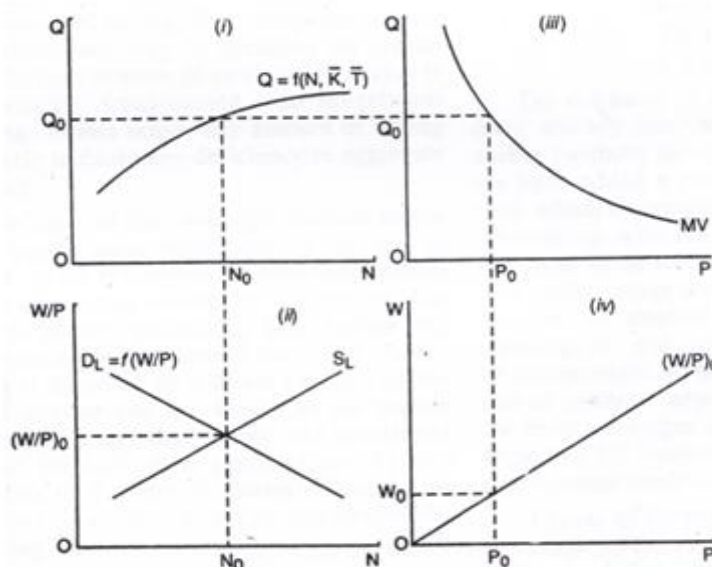


Figure 3.3 Classical System without Saving and Investment

represents the equilibrium real wage line which is the locus of different money wage rates and price levels such that the real wage rate throughout remains the same. Given this equilibrium real wage rate and the equilibrium price P_0 there is only one money wage rate W_0 consistent with the both. Part (i) of the figure shows the production function which relates the level of output to the level of the labour inputs, when the stock of capital and techniques of production are assumed to be given. The production function indicates that the level of output Q_0 corresponds with the level of employment N_0 . Part (ii) of the figure shows that the demand function of labour along with labour supply function determines the equilibrium in the labour market at N_0 full employment level with the equilibrium real wage rate at $(W/P)_0$.

Classical System with Saving and Investment

The classical model we have been discussing is oversimplified because it does not recognize the processes of saving and investment. We must now recognize that the income earned is not fully spent for consumption goods; some part of this income is withheld from consumption, or saved. Clearly, if planned investment spending is not equal to the income saved, Say's Law is invalidated. Another part of classical theory provides the mechanism that presumably assures that planned saving will not exceed planned investment. This mechanism is the rate of interest. Classical theory treated saving as a direct function of the rate of interest and investment as an inverse function. The rate of interest will fluctuate freely over the wider range necessary to equate saving and investment. To simplify the exposition of the classical system, let us assume here that the curve is indeed elastic, so that investment is relatively responsive to changes in the rate of interest. Small changes will then keep saving and investment in balance.

In other words, the classical analysis so far has been pursued on the assumption that the community spends away its entire earnings by way of consumption and no part of it is saved. Saving is one possible trouble spot in the otherwise harmonious picture of classical system. Saving can make problems in Say's Law. Although, the Classical's recognized the existence of saving, they interpreted saving as an alternative way of spending on capital goods. In their scheme of analysis, all saving is automatically transformed into investment spending. In this sense, any amount of saving is unlikely to cause any deficiency in aggregate spending.

The basis of this strategic classical notion is the equilibrating mechanism of the rate of interest, which is supposed to transform savings into an equivalent amount of investment. The classical system postulates both saving and investment as the functions of the rate of interest. Saving is assumed as a direct function of the rate of interest and investment as the inverse function of it and that saving and investment can be brought into equilibrium by the variations in the rate of interest. Thus in the classical system we must introduce the following relations:

$$\begin{aligned} S &= f(r) \text{ (Saving function)} \\ I &= f(r) \text{ (Investment function)} \\ S &= I \text{ (Equilibrium in the capital market)} \end{aligned}$$

Another significant fact in connection with the above relations is that saving and investment are supposed to be relatively more interest-elastic so that the volumes of saving and investment change with very small changes in the rate of interest.

An excess of S over I can be offset through a reduction in the rate of interest. On the opposite, a rise in the rate of interest can restore equality between them, when investment exceeds saving. The possibility of transforming any level of saving into equivalent volume of investment through small variations in the rate of interest is based on the implicit assumption that there are infinite possibilities of new investment in the economy because, otherwise, the excess of full employment saving over investment will vitiate Say's Law and permit the economic system to degenerate into secular stagnation.

The classical full employment system with saving and investment can be studied through the following set of equations:

$$\begin{aligned} Q &= f(N, \bar{K}, \bar{T}) && \dots \text{ (i)} \\ DL &= f(S/P) && \dots \text{ (ii)} \\ SL &= f(W/P) && \dots \text{ (iii)} \\ MV &= PQ && \dots \text{ (iv)} \\ S &= f(r) && \dots \text{ (v)} \\ I &= f(r) && \dots \text{ (vi)} \\ S &= I && \dots \text{ (vii)} \end{aligned}$$

In addition to the four equations (i) to (iv), that we have used to analyse the classical system (without saving and investment), we have added a new set of equations (v) to (vii) which incorporates saving and investment relationship with rate of interest. These two sets have to be studied quite independently of each other, since the rate of interest and the division of output between the output of consumption and investment goods seems to be independent of the factors influencing the size of national output, quantity of money and the level of wages and prices. However, the impact of S-I inequalities upon the volume of employment needs to be investigated.

Excess of Saving over Investment: If the full employment ex-ante S exceeds the ex-ante I , it means that expenditure on consumption plus investment goods falls short of the value of total output. Given the supply of money, the surplus output can be cleared off the market at lower prices. The fall in price level will push up the real wage rate assuming the money wages to be given. The increase in real wage rate will cause an excess of the supply of labour over the demand for it. The appearance of unemployment will lower the level of output also. The interest rate flexibility will set into motion the process of adjustment. A fall in interest rate will reduce savings, thereby causing an increase in consumption expenditure. The investment expenditure will also increase. Given the supply of money, an increase in aggregate expenditure will raise the demand for money which will push up the prices resulting in a decline in real wages and a consequent reduction in the excess supply gap in the labour market. Thus, a reduction in the rate of interest, initiating a tendency towards equilibrium in the capital market, sets such forces into action which tend the labour market also towards equilibrium at full employment.

Excess of Investment over Saving

An excess of ex-ante I over S at the prevailing rate of interest will imply an excess of ex-ante expenditure over the value of current output. This will lead to an increase in the price level. The real wage rate will go down and create a state of excess demand in the labour market. That would ultimately be chocked off by a rise in the rate of interest, setting a chain reaction in the money market. Thus, the interest rate flexibility ensures a state of full employment in the economic system. It follows that classical system has an inbuilt mechanism in wage and interest rate flexibility which tend it continuously towards full employment whenever the economy faces certain lapses from full employment.

Wage-Price Flexibility and Full-Employment

The classical economists also proved the validity of the assumption of full-employment with another fundamental logic. According to them, the amount of production which the business firms can supply does not depend only on aggregate demand or expenditure but also on the prices of products. If the rate of interest temporarily fails to bring about equality between saving and investment and as a result deficiency of aggregate expenditure arises, even then the problem of general over-production and unemployment will not arise. This is because they thought that the deficiency in aggregate expenditure would be made up by changes in the price level. When due to the increase in the savings of the people, the expenditure of the people declines; it will then affect the prices of products. As a result of fall in aggregate expenditure or demand, the prices of products would decline and at reduced prices their quantity demanded will increase and as a result all the quantity produced of goods will be sold out at lower prices. In this way, they expressed the view that in spite of the decline in aggregate expenditure caused by the increase in savings, the real output, income and employment will not fall provided the fall in prices of products is proportionate to the decline in aggregate expenditure.

Classical economists thought that a free-market capitalist economy actually works in that way. Owing to the intense competition between the sellers of products as a consequence of the fall in expenditure, the prices will decline. This is because when aggregate expenditure on goods or demand for them declines, the various sellers and producers reduce the prices of their products so as to avoid the excessive accumulation of stocks of goods with them. Hence, according to the classical logic, increased saving will bring down the prices of products and not the amount of production and employment. But

now a question arises to what extent the sellers or producers will tolerate the decline in prices. However, to make their business profitable they will have to reduce the prices of the factors of production such as labour. With a fall in wages of labour, all workers will get employment. If some workers do not want to work at reduced wages, they will not get any job or employment and therefore will remain unemployed. But, according to classical economists, those workers who do not want to work at lower wages and thus remain unemployed are only voluntarily unemployed. This voluntary unemployment is not real unemployment. According to the classical thought, it is involuntary unemployment which is not possible in a free-market capitalist economy. All those workers who want to work at the wage rate determined by market forces will get employment.

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Flexible interest rates, wages, and prices

Classical economists believe that under these circumstances, the interest rate will fall, causing investors to demand more of the available savings. In fact, the interest rate will fall far enough—from i to i' in Figure 1—to make the supply of funds from aggregate saving equal to the demand for funds by all investors. Hence, an increase in savings will lead to an increase in investment expenditures through a reduction of the interest rate, and the economy will always return to the natural level of real GDP. The flexibility of the interest rate as well as other prices is the self-adjusting mechanism of the classical theory that ensures that real GDP is always at its natural level. The flexibility of the interest rate keeps the money market, or the market for loanable funds, in equilibrium all the time and thus prevents real GDP from falling below its natural level.

Similarly, flexibility of the wage rate keeps the labor market or the market for workers, in equilibrium all the time. If the supply of workers exceeds firms' demand for workers, then wages paid to workers will fall so as to ensure that the work force is fully employed. Classical economists believe that any unemployment that occurs in the labor market or in other resource markets should be considered voluntary unemployment. Voluntarily unemployed workers are unemployed because they refuse to accept lower wages. If they would only accept lower wages, firms would be eager to employ them.

Thus, the Classical School believed that 'real factors of production' combined with free markets would increase the wealth of a nation. In summary, Classical economics: a) stressed the role of real as opposed to monetary factors in determining real outcomes like output and employment. Money was considered strictly a medium of exchange not a causal factor in economic growth; and, b) stressed the role of the self-adjusting marketplace to ensure output and employment. Government had no role in ensuring adequate demand or employment other than essential infrastructure, e.g. roads, canals and competitive markets.

According to classical, there are two types of variables in the Classical Model (in fact in all the models we will study). These are endogenous (within the system – capital, labour, wage and price) and exogenous (outside the system – technology, population growth). In the Classical system the exogenous variables affect supply rather than demand. Thus if there is technological change then the MPN will change; if population increases or decreases the supply of labour will change. The Classical system does not consider demand to be a question. In effect, Say's Law is assumed to hold: supply creates its own demand, and, accordingly, there is never a lack of aggregate demand.

So far we have considered only the real wage rate (W/P) as playing a role. The question arises as to what effect changes in the money wage and money price will have on output. If money P or W change then the real wage will change. If the real wage changes there will also changes in the demand and supply of labour. Given the money wage, a firm will choose the quantity of labour where:

$W = MPN \times P$ or, the money wage equals the MPN times the Price of goods and services.

If P increases then demand for labour will shift to the right, i.e. real wage falls; if P falls demand for labour will shift to the left. In fact the demand for labour is a function only of the real wage. A proportionate increase in W and P will thus result in the same demand for labour. Thus if firms compete by raising money wages to attract workers other firms that do not increase the money wage will loose workers and eventually exit the industry. However, to pay the higher money wage firms must increase prices which decrease the real wages until equilibrium is re-established with a higher money wage, higher money prices but the same level of out as at the beginning of the process. In fact the aggregate supply curve under the Classical model is vertical. No matter the price level, money wages will adjust to maintain the real wage and the real level of output.

Thus, according to the classicals, output is determined purely by supply factors and demand plays no role. Similarly factors like the quantity of money, level of government spending, and demand for investment goods are all 'demand' factors that play no role in determining output in the classical model. Taxes that affect supply-side factors will, however, affect output. However, factors affecting the classical equilibrium include changes in technology, reduction of the price of raw materials as well as growth of the capital stock. Thus, the Classical model is thus characterized by the supply-determined nature of real output and employment. The aggregate supply curve is vertical because of assumptions made about the labour market: (i) perfectly flexible wages and prices; and, implicitly, (ii) perfect information, and, of course, perfectly competitive industries.

Keyne's Criticism of Classical Theory:

J.M. Keynes criticized the classical theory on the following grounds:

1. According to Keynes saving is a function of national income and is not affect by changes in the rate of interest. Thus, saving-investment equality through adjustment in interest rate is ruled out. So Say's Law will no longer hold.
2. The labour market is far from perfect because of the existence of trade unions and government intervention in imposing minimum wages laws. Thus, wages are unlikely to be flexible. Wages are more inflexible downward than upward. So a fall in demand (when S exceeds I) will lead to a fall in production as well as a fall in employment.
3. Keynes also argued that even if wages and prices were flexible a free enterprise economy would not always be able to achieve automatic full employment.

THE QUANTITY THEORY OF MONEY - FISHER'S EQUATION OF EXCHANGE – CASH BALANCE APPROACH

The Quantity Theory of Money seeks to explain the factors that determine the general price level in a country. The theory states that the price level is directly determined by the supply of money. The quantity theory of money is based directly on the changes brought about by an increase in the money supply. The quantity theory of money states that the value of money is based on the amount of money in the economy. Thus, according to the quantity theory of money, when the supply of money increases the, the value of money falls and the price level increases. We know that inflation is persistent rise in the price level. Hence, on the basis of this definition, the quantity theory of money also states that growth in the money supply is the primary cause of inflation.

Value of Money

The basic causal relationship between the price level and the value of money is that as the price level goes up, the value of money goes down. The "value of money" refers to what a unit of money can buy whereas the "price level" refers to the average of all of the prices of goods and services in a given economy. A unit of money has its denomination printed on it known as the "face value," but the unit only has tangible value in relation to what a person can buy with it. This is called its "purchasing power." The purchasing power of a given currency changes over time due to variations in supply and demand, but in general it slowly loses value as the price level rises.

Price Level

In contrast to the value of money, which is expressed in units, the price level is an aggregate. Because it is difficult, confusing and nearly impossible to accurately average all prices for all goods and services in an economy, the price level is most commonly analyzed by finding the price of a theoretical collection of goods and services. The price level inevitably increases over time due to inflation, though in most economies this increase is gradual.

Relationship

As the price level increases over time, the value of money decreases. In most countries, the price level increases slowly with inflation and changes in supply and demand. Like most things in economics, there is a market for money. The supply of money in the money market comes from the Central Bank. The Central Bank has the power to adjust the money supply by increasing or decreasing it. The demand for money in the money market comes from consumers. The determinants of money demand are infinite. In general, consumers need money to purchase goods and services. If there is an ATM nearby or if credit cards are plentiful, consumers may demand less money at a given time than they would if cash were difficult to obtain. The most important variable in determining money demand is the average price level within the economy. If the average price level is high and goods and services tend to cost a significant amount of money, consumers will demand more money. If, on the other hand, the average price level is low and goods and services tend to cost little money, consumers will demand less money. The value of money is ultimately determined by the intersection of the money supply, as controlled by the Central Bank and money demand, as created by consumers. The value of money, as revealed by the money market, is variable. A change in money demand or a change in the money supply will yield a change in the value of money and in the price level. The change in the value of money and the change in the price level are of the same magnitude but in opposite directions.

Velocity

The most important variable that intervenes the effects of changes in the money supply is the velocity of money. Velocity of money is defined simply as the rate at which money changes hands. If velocity is high, money is changing hands quickly, and a relatively small money supply can fund a relatively large amount of purchases. On the other hand, if velocity is low, then money is changing hands slowly, and it takes a much larger money supply to fund the same number of purchases. The velocity of money is not constant. Instead, velocity changes as consumers' preferences change. It also changes as the value of money and the price level change. If the value of money is low, then the price level is high, and a larger number of bills must be used to fund purchases. Given a constant money supply, the velocity of money must increase to fund all of these purchases. Similarly, when the money supply shifts due to the Central Banks policy, velocity can change. This change makes the value of money and the price level remain constant.

The relationship between velocity, the money supply, the price level, and output is represented by the equation $M * V = P * Y$ where M is the money supply, V is the velocity, P is the price level, and Y is the quantity of output. $P * Y$, the price level multiplied by the quantity of output, gives the nominal GDP. This equation can thus be rearranged as $V = (\text{nominal GDP}) / M$. Conceptually, this equation means that for a given level of nominal GDP, a smaller money supply will result in money needing to change hands more quickly to facilitate the total purchases, which causes increased velocity. The equation for the velocity of money, while useful in its original form, can be converted to a percentage change formula for easier calculations. The velocity equation can be used to find the effects that changes in velocity, price level, or money supply have on each other. When making these calculations, remember that in the short run, output (Y), is fixed, as time is required for the quantity of output to change.

Let's try an example. What is the effect of a 3% increase in the money supply on the price level, given that output and velocity remain relatively constant? The equation used to solve this problem is (percent change in the money supply) + (percent change in velocity) = (percent change in the price level) + (percent change in output). Substituting in the values from the problem we get $3\% + 0\% = x\% + 0\%$. In this case, a 3% increase in the money supply results in a 3% increase in the price level. Remember that a 3% increase in the price level means that inflation was 3%.

In the long run, the equation for velocity becomes even more useful. In fact, the equation shows that increases in the money supply by the Central Bank tend to cause increases in the price level and therefore inflation, even though the effects of the Central Bank's policy is slightly dampened by changes in velocity. This results a number of factors. First, in the long run, velocity, V , is relatively constant because people's spending habits are not quick to change. Similarly, the quantity of output, Y , is not affected by the actions of the Central Bank since it is based on the amount of production. This means that the percent change in the money supply equals the percent change in the price level since the percent change in velocity and percent change in output are both equal to zero. Thus, we see how an increase in the money supply by the Central Bank causes inflation.

The velocity of money equation represents the heart of the quantity theory of money. By understanding how velocity mitigates the actions of the Fed in the long run and in the short run, we can gain a thorough understanding of the value of money and inflation. There are two versions of the Quantity Theory of Money: (1) The Transaction Approach and (2) The Cash Balance Approach. Let us discuss them in detail.

QUANTITY THEORY OF MONEY (QTM)

Fisher's Equation of Exchange or the Transaction Approach

Irving Fisher an American economist put forward the Cash Transaction Approach to the quantity theory of money. He in his book *The Purchasing Power of Money* (1911) has stated that the value of money in a given period of time depends upon the quantity of money in circulation in the economy. It is the quantity of money which determines the general price level and the value of money. Any change in the money supply directly affects the general price level and the value of money inversely in the same proportion. In Fisher's words, "Other things remaining unchanged, as the quantity of money in circulation increases, the price level also increases in direct proportion and the value of money decreases and vice versa". For example, if the quantity of money in circulation is doubled other things being equal the general price level will be doubled and the value of money is halved. Similarly if the quantity of money is halved the price level will be halved and the value of money doubled. In Fisher's Cash Transactions Version of Money, the general price level in a country, like the prices of commodities, is determined by the supply of and demand for money.

(a) Supply of Money: The supply of money consists of the quantity of money in circulation (M) and the velocity of its circulation (V) i.e., the number of times the money changes hands. Thus MV refers to the total volume of money in circulation during a period of time. For example, if the total money supply in Pakistan Rs. 5,000 billion and its velocity per unit of time is 10 times, then the total money supply would be Rs.5,000 x 10 = Rs.50000 billion.

(b) Demand for Money: People demand money not for its own sake. They demand money because it serves a medium of exchange. It is used to carry every day transactions. In short, the demand for money is for the exchange of goods.

Assumptions of the theory

(1) Full employment: The theory is based on the assumption of full employment in the economy

(2) T and V are constant: The theory assumes that volume of trade (T) in the short run remains constant. So is the case with velocity of money (V) which remains unaffected.

(3) Constant relation between M and M1. Fisher assumes constant relation between currency money M and credit money (M1).

(4) Price level (P) is a passive factor. The price level (P) is inactive or passive in the equation. P is affected by other factors in equation i.e., T, M, M1, V and V1 but it does not affect them.

Equation of Exchange:

The Cash transaction version of the quantity theory of money was presented by Irving Fisher in the form of an equation. Thus Fisher's transaction approach to the Quantity Theory of Money may be explained with the following equation of exchange.

$$MV = PT$$

Where,

M is the total supply of money

V is the velocity of circulation of money

P is the general price level

T is the total transactions in physical goods.

This equation is an identity, that is, a relationship that holds by definition. It means, in an economy the total value of all goods sold during any period (PT) must be equal to the total quantity of money spent during that period (MV). Fisher assumed that (1) at full employment total physical transactions T in an economy will be a constant, and (2) the velocity of circulation remain constant in the short run because it largely depends on the spending habits of the people. When these two assumptions are made the Equation of Exchange becomes the Quantity Theory of Money which shows that there is an exact, proportional relationship between money supply and the price level. In other words, the level of prices in the economy is directly proportional to the quantity of money in circulation. That is, doubling the total supply of money would double the price level.

It may be noted that the above Fisher's Equation include only primary money or currency money. But modern economy extensively uses demand deposits or credit money. It was on account of the growing importance of credit money that Fisher later on extended his equation of exchange to include credit money. Thus, the equation of exchange can be represented as follows:

$$P = \frac{MV + M1V1}{T} \quad \text{or} \quad PT = MV + M1V1$$

Here,

P is the price Level

M is the quantity of money

V is the velocity of circulation of M

M1 is the volume of credit money

V1 is the velocity of circulation of M1

T is the total volume of goods and Trade

Fisherian relation between M and P can be explained with the help of a diagram. The figure below shows equi-proportionate changes between M and P. As quantity of money increases from M_0 to M_1 , price level rises from P_0 to P_1 . Similarly, when the quantity of money increases from M_1 to M_2 , the price level increases from P_1 to P_2 making the changes in the quantity of money equal to the changes in the price level.

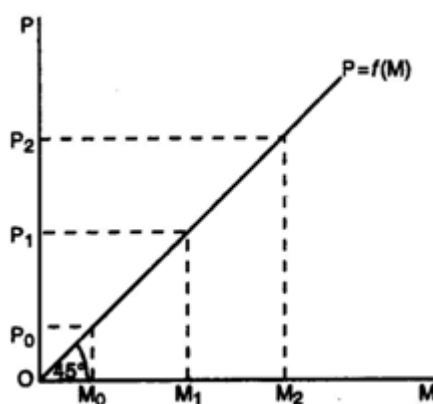


Figure 3.4 Relationship between Quantity of Money and Price Level

Fisher's Transaction Approach can explain the causes of hyperinflation that occurs during war or emergency. It can also explain certain long term trend in prices. But it cannot explain normal peace time inflation. This shortcoming has been modified by the Cambridge version or the Cash-Balance Approach.

Criticism of the theory:

The quantity theory is subjected to the following criticism.

- (1) **Unrealistic assumptions:** The theory is based on unrealistic assumptions. In this theory P is considered as a passive factor. T is independent. M_1 , V , V_1 , are constant in the short run. All these assumptions are covered under “Other things remaining the same.” In actual working of the economy, these do not remain constant; hence, the theory is unrealized and misleading.
- (2) **Various Variables in the transaction are not independent.** The various variables in transaction equation are not independent as assumed in the theory. The fact is that they very much influence each other. For example when money supply (M) increases the velocity of money (V) also goes up. Take an other case. Fisher assumes (P) is a passive factor and has no effect on trade (T). In actual practice, when price level (P) rises, it increases profits and promotes trade (T).
- (3) **Assumption of full employment is wrong.** J. M. Keynes has raised an objection that the assumption of full employment is a rare phenomenon in the economy and the theory is not real.
- (4) **Rate of interest ignored.** In the quantity theory of Fishers, the influence of the rate of interest on the money supply and the level of prices have been completely ignored. The fact is that an increase or decrease in money supply has an important bearing on the rate of interest. An increase in money supply leads to a decline in the rate of interest and vice versa.
- (5) **Fails to explain trade cycles.** The theory fails to explain the trade cycles. It does not tell as to why during depression, the increase in money supply has little impact on the price level, Similarly, in boom period the reduction in money supply or tight money policy may not bring down the price level. G. Crowther is right in saying, “The quantity theory is at best an imperfect guide to the cause of the business cycle”.
- (6) **Ignores other factors of price level.** There are many determinants other than M , V , and T which have important implication on the price level. These factors such as income, expenditure, saving, investment, population consumption etc have been ignored from the purview of the theory.

The Cash Balance Approach (Cambridge Approach)

Fisher’s approach can be viewed as deterministic. Essentially, Fisher argued that, given the full employment volume of transactions and the speed with which the financial system could process payments, the quantity of money that agents required to hold was effectively determined. Alfred Marshall, A.C. Pigou, D.H. Robertson and J.M. Keynes at Cambridge School made an alternative formulation of the quantity theory of money which is known as Cash Balance equation. Like Fisher, the Cambridge School assumed that money was only held to expedite transactions and had no further purpose. Thus, if the money supply increased, agents holding the increased money stock would seek to get rid of it. However, the emphasis in this approach concentrated on establishing the quantity of money that agents would voluntarily *desire* to hold. The Cambridge school were in effect attempting to set out a theory of the demand for money.

The Cambridge approach emphasises that there are alternatives to holding money in the shape of shares and bonds. These assets yield a return which can be viewed as the opportunity cost of holding money. As interest rates rise, agents will economise on money holdings and vice versa. Another factor that will influence money holdings is the expected rate of inflation. If inflation is expected to be high, then the purchasing power of money will fall. This will prompt agents to buy securities or commodities as a hedge against inflation. The Cambridge economists regarded the determination of value of money in

terms of supply and demand. The supply of money is exogenously determined by the banking system. Therefore, the concept of velocity of circulation is altogether discarded in the cash balances approach. On the other hand, the concept of demand for money plays the major role in determining the value of money. The demand for money is the demand to hold cash balance for transactions and precautionary motives. Thus, the cash balance approach considers the demand for money not as a medium of exchange but as a store of value. The Cambridge equations show that given the supply of money at a point of time, the value of money is determined by the demand for cash balances. When the demand for money increases, people will reduce their expenditures on goods and services in order to have larger cash holdings. Reduced demand for goods and services will bring down the price level and raise the value of money. On the contrary, fall in the demand for money will raise the price level and lower the value of money.

Marshall's Equation

We may express the idea of Marshall in the form of an equation as follows:

$M = kPY$ where M stands for the exogenously determined supply of money, k is the fraction of the real money income (PY) which people wish to hold in cash and demand deposits, P is the price level, Y is the aggregate real income of the community. Thus, the price level $P = \frac{M}{kY}$ or the value of money (the reciprocal or price level) is $\frac{1}{P} = \frac{kY}{M}$.

Pigou's Equation

Pigou was the first Cambridge economist to express the cash balance approach in the form of an equation and his equation can be expressed as:

$P = \frac{kR}{M}$ where P is the purchasing power of money (the value of money which is the reciprocal of the price level), k is the proportion of total real resources or income (R) which people wish to hold in the form of titles or legal tender, (Real Income), and M refers to the number of actual units in legal tender money.

The demand for money, according to Pigou, consists not only of legal money or cash but also bank notes and bank balances. In order to include bank notes and bank balances in the demand for money, Pigou modifies his equation as:

$$P = \frac{kR}{M} \{c + h(1 - c)\}$$

Where, c is the proportion of total real income actually held by people in legal tender including token coins, $(1-c)$ is the proportion kept in bank notes and bank balances, and h is the proportion of actual legal tender that bankers keep against the notes and balances held by their customers.

Pigou's equation explains the reason behind the value of money and also the motive behind people keeping larger or smaller proportions of their income in the form of money. During a period of rising prices, as the value of money decreases, people want to hold smaller proportion of their income in the form of cash while during the period of depression, as the value of money is rising; people want to keep larger proportion of their income in the form of cash.

Criticisms of Cash Balance Approach

The main drawbacks of the cash balance theory are as under:

- (1) Use of Purchasing Power for consumption goods. The Cambridge economists give undue importance the purchasing power of money in term of consumption goods. The theory ignores speculative motive of demand for money.
- (2) Role of rate of interest ignored. The cash balance theory excludes the role of rate of interest in explaining the changes in the price Level which is very important in Inf the demand for money.
- (3) Unitary elasticity of demand. The Cambridge equation assumes that the elasticity demand for money is unity. This is not realistic in the dynamic society of today.
- (4) Real income not the sole determinant of K . According to the Cambridge equation, real income only determines the value of K i.e., the cash held by people. The fact is that other factors as price level; banking and business habits of the people, political conditions in the country can influence the value of K .
- (5) Simple Truism. The Cambridge equation, like the Fisherian equation establishes proportionate relationship between the quantity of money and the price level. $M = KPY$. The theory does not explain as to how and why this relationship between the two is established.
- (6) K and T assumed constant. The Cambridge economist like Irving Fisher also assumes that K and T remain constant. This is possible in a static situation but not in dynamic conditions.
- (7) No explanation of business cycles. The Cambridge equations do not provide any explanation for the business cycles.

Comparison between Transactions and Cash Balance Approaches

There are similarities as well as dissimilarities between the Transactions and Cash balance approaches.

Similarities

1. Same conclusion about M and P : The basic conclusion in both the approaches is the same that the value of money or the price level is a function of the quantity of money.
2. Similar Equations: The two approaches use almost similar equations.
3. Both approaches consider that money serves as a medium of exchange in the economic system.

Dissimilarities

There are a lot of differences between the Transactions approach and Cash Balance approach of the quantity theory of money which are given below.

1. Functions of Money: The Fisherian approach lays emphasis on the medium of exchange function of money while the Cambridge approach emphasises the store of value function of money.
2. Flow and Stock: In Fisher's approach money is a flow concept while in the Cambridge approach it is a stock concept.
3. V and k Different: In Fisher's equation V refers to the rate of spending and in Cambridge equation k refers to the cash balances which people wish to hold.
4. Nature of Price level: In Fisher's equation, P refers to the average price level of all goods and services. But in the Cambridge equation P refers to the prices of final or consumer goods.
5. Nature of T : In Fisher's equation, T refers to the total amount of goods and services exchanged for money, whereas in the Cambridge equation T refers to the final or consumer goods exchanged for money.

Superiority of Cash Balance Approach over Transactions Approach

The Cash Balance approach to the Quantity Theory of Money is superior to the Transaction Approach on the following grounds.

1. The Transaction approach emphasizes the medium of exchange function of money only. On the other hand, the Cash Balance approach stresses equally the store of value function of money. Therefore, this approach is consistent with the broader definition of money which includes demand deposits.
2. In its explanation of the determinants of V , the Transaction approach stresses the mechanical aspects of the payments process. In contrast, the Cash Balance approach is more realistic as it is behavioral in nature which is built around the demand function for money.
3. As to the analytical technique, the Cash Balance approach fits in easily with the general demand-supply analysis as applied to the money market. This feature is not available in the Transaction approach.
4. The Cash Balance approach is wider and more comprehensive as it takes into account the income level as an important determinant of the price level. The Transaction approach neglected income level as the determinant of the price level.
5. According to the Transaction approach, the change in P is caused by change in M only. In the Cash Balance approach P may change even without a change in M if k undergoes a change. Thus k , according to the Cash Balance approach is a more important determinant of P than M as stressed by the Transaction approach.
6. Moreover, the symbol k in the Cash Balance approach proves to be a better tool for explaining trade cycles than V in Fisher's equation.

NEUTRALITY OF MONEY

Neutrality of Money

Neutrality of money is an important idea in classical economics and is related to the classical dichotomy. If money is neutral, an increase in the quantity of money will merely raise the level of money prices without changing the relative prices and the interest rate. It implies that the central bank does not affect the real economy (e.g., the number of jobs, the size of real GDP, the amount of real investment) by printing money. Instead, any increase in the supply of money would be offset by an equal rise in prices and wages. This assumption underlies some mainstream macroeconomic models (e.g., real business cycle models) while others like monetarism view money as being neutral in the long-run. Neutrality of money is the idea that a change in the stock of money affects only nominal variables in the economy such as prices, wages and exchange rates, with no effect on real (inflation-adjusted) variables, like employment, real GDP, and real consumption. Thus, the classical economists believed in the neutrality of money. Neutrality of money means that money is neutral in its effect on the economy. Thus, neutrality of money is an economic theory that states that changes in the aggregate money supply affect only the nominal variables and do not affect real variables. Therefore, an increase in the money supply would increase all prices and wages proportionately, but have no effect on real economic output (GDP), unemployment levels, or real prices. The neutrality of money is based on the idea that changing the money supply will not change the aggregate supply and demand of goods, technology or services. The only impact of a change in the money supply is on the general price level. According to Don Patinkin the neutrality of money is a situation when a uniformly introduced increase in the quantity of money causes a

proportionate increase in the equilibrium price of commodities and leaves the equilibrium rate of interest unaffected. In other words, money is neutral it does not affect relative prices and leaves the interest rate unaffected. All prices move equiproportionally. Thus, the quantity of money determines only absolute prices and their level does not affect the level of income, interest rate, capital formation and employment. It plays no role in the determination of employment, income and output. It was a cornerstone of classical economic thought, but modern-day evidence suggests that neutrality of money does not fully apply in financial markets.

In the classical system, the main function of money is to act as a medium of exchange. It is to determine the general level of prices at which goods and services will be exchanged. The quantity theory of money states that price level is a function of the supply of money. Algebraically, $MV = PT$, where M, V, P and T are the supply of money, velocity of money, price level, and the volume of transactions (total output) respectively. The equation tells that the total money supply, MV, equals the total value of output, PT, in the economy. Assuming V and T to be constant, a change in M causes a proportionate change in P. Thus, money is neutral whose main function is to determine the general price level at which goods and services exchange.

The neutrality of money is considered a plausible scenario over long-term economic cycles, but not over short time periods. In the short term, changes in the money supply seem to affect real variables like GDP and employment levels, mainly because of price stickiness and imperfect information flow in the markets. Central banks monitor the money supply closely, and step in (through open market operations) to change the money supply when conditions deem it necessary. Their actions indicate that short-term money supply changes can and do affect real economic variables.

The Non-Neutrality of Money

In the Keynesian system, when there are unemployed resources in the economy, money is non-neutral. Thus, an increase in the money supply produces non-neutral effects on the rate of interest, the level of employment, income and output, the rate of capital formation. As result of an increase in the money supply the interest rate will be lowered which increases investment which in turn increases employment, output and income.

Money illusion

The term “Money Illusion” was first used by the American economist, Irving Fisher. He used it to refer the failure to realize that the value of a unit of currency is liable to vary in value terms of what it will buy. In economics, money illusion refers to the tendency of people to think of currency in nominal, rather than real, terms. In other words, the numerical/face value (nominal value) of money is mistaken for its purchasing power (real value). Thus, money illusion is an economic theory stating that people have an illusory picture of their wealth and income based on nominal (dollar) terms, rather than in real terms. Real prices and income take into account the level of inflation in an economy. Thus, consumers are commonly subject to ‘the money illusion’, whereby a consumer’s perception of the value of money is influenced by the nominal value of the currency. Money illusion is often cited as a reason why small levels of inflation (1-2% per year) are actually desirable for an economy. Having small levels of inflation allows employers, for example, to modestly raise wages in nominal terms without actually paying more in real terms. As a result, many people who get pay raises believe that their wealth is increasing, regardless of the actual rate of inflation.

Thus, even without a change in the real income, consumers will increase their consumption if they are subject to money illusion. Suppose for example, during a given period, the consumer price level rises by 10 percent and the current –dollar disposable income of the families also rises by 10 percent. Those families that recognize that their money income is unchanged in real terms suffer no money illusion and will maintain their consumption and saving unchanged in real terms (they will increase both spending and saving in current dollars by 10 percent). Other families may be subject to a money illusion in either of two ways. Some may see only that the price level has risen and somehow overlook the fact that their current-dollar disposable income has risen proportionately. They are actually no worse off, but they believe that they are and act accordingly. To the extent that families reduce the fraction of income saved in response to a decrease in real income, the families whose money illusion leads them to believe they have suffered a decrease in real income will reduce the fraction of income saved or increase the fraction consumed. This of course, involves real income was actually unchanged. Other families may see only the rise in their current-dollar rise in the price level. These families will feel better off and, accordingly, may increase the fraction of income saved or reduce the fraction consumed. This involves a decrease in real consumption, because their real income was actually unchanged.

If we assume that no widespread money illusion exists among consumers, we may expect no appreciable change in the fraction of aggregate current-dollar disposable income devoted to consumption expenditure as a result of a change in the consumer price level accompanied by a proportional change in current dollar disposable income. In terms of the aggregate consumption function diagram, if we measure real income and real consumption on the two axes, the economy remains at the same points on the income and consumption axes.

If changes in the consumer price level are not matched by compensating changes in current dollar disposable income, there will be changes in real disposable income. A change in real disposable income directly affects real consumption expenditures. A rise in prices that leads to a fall in real disposable income should move consumers as a group back down the aggregate short run consumption function. At this new point on the function, there will be an absolute decrease in real consumption expenditures and an increase in the fraction of real disposable income devoted to consumption expenditures. On the other hand, a fall in prices that leads to a rise in real disposable income moves consumers as a group up along the function. There will be an absolute increase in real consumption expenditures and a decrease in the fraction of real disposable income devoted to consumption expenditures. In short, a changing price level may affect real consumption expenditures to the extent that the changing price level is not offset by changes in current dollar disposable income, provided that consumers are not subject to money illusion.

THE PIGOU EFFECT

The Pigou effect also identified as the wealth effect was advocated by A.C Pigou. The term Pigou effect refers to the stimulation of output and employment caused by increasing consumption due to a rise in real balances of wealth, particularly during deflation. The Pigou effect was propounded by A.C. Pigou in 1943 to counter Keynes' argument that wage-price deflation cannot lead to automatic full employment. Thus, the Pigou effect is an economics term that describes what happens in the economy, particularly with the aggregate consumption, if prices fall. It is an effect that deals with economic wealth. Wealth was defined by Arthur Cecil Pigou as the sum of the money supply and government bonds divided by the price level.

Thus, Pigou effect is a term in economics referring to the relationship between consumption, wealth, employment and output during periods of deflation. Defining wealth as the money supply divided by current price levels, the Pigou effect states that when there is deflation of prices, employment (and thus output) will be increased due to an increase in wealth (and thus consumption). Alternatively, with the inflation of prices, employment and output will be decreased, due to a decrease in consumption. Pigou fully recognized that interest-rate effect of Keynes that wage-price deflation raises investment and income through a reduction in the interest rate. But he did not agree that the real income cannot be raised to the level of full employment due to liquidity trap. According to Pigou, a wage-price deflation will generate automatic full employment via an increase in the level of consumption. He argued that when money wages are cut, prices fall and the value of money rises. The rise in the value of money means a rise in the real value of assets such as stocks, shares, bank deposits, government securities, bonds, etc. For example, if prices fall by 50 per cent, the real value of each rupee will be doubled because it will purchase twice as much as it did before. The increase in the real value of fixed asset will make their owners feel richer than before. They will, therefore, save less out of their current income and spend more on consumption. This will increase aggregate demand and output, and will generate automatic full employment in the economy. As a result of the Pigou effect, the consumption function will shift upward (or the saving function will shift down-ward). In terms of the IS function, it means a rightward shift of the IS curve. Thus, Pigou argued that deflation due to a drop in aggregate demand would be more self-correcting. The deflation would cause an increase in wealth, causing expenditures to rise, and thus correcting the drop in demand. It is a concept that says that a large fall in prices would stimulate an economy and create the 'wealth effect' that will generate full employment. That is, as prices fall, more money becomes available to consumers for spending whose purchases create demand for more production and hence more jobs. The Pigou effect is also known as the **real balance effect**.

The important point in Pigou effect is that it is based on the assumptions of flexible wage and price levels, and a constant stock of money. Therefore, it is only the IS curve that shifts to the right with the increase in consumption or reduction in saving when the real value of fixed assets increases. The LM curve is assumed to be given because of the assumption of a constant stock of money. This is because the analysis of Pigou effect runs strictly in terms of static analysis.

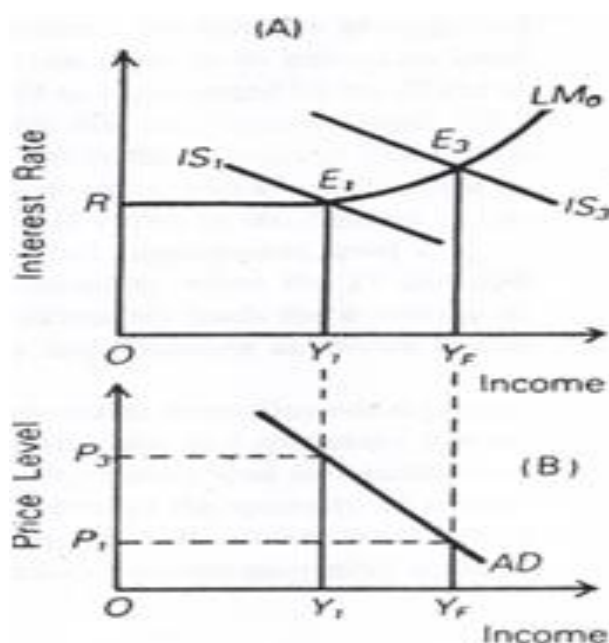


Figure 3.5 The Pigou Effect

Another important point is that this analysis is based upon the flexibility of absolute prices. Patinkin summarises the Pigou effect in the following theorem: “There always exists a sufficiently low price level such that, if expected to continue indefinitely, it will generate full employment”. Algebraically, if the money supply which is assumed to be constant is M_0 and the price level is P_1 then the saving function (or consumption function) will be $S = f [RY (M_0/P)]$. Thus saving depends upon the interest rate (R), income (Y) and the ratio of given money supply to absolute prices (M_0/P). When prices fall the real value of a given stock of money rises and people reduce their saving or increase consumption, thereby increasing aggregate demand. This process will automatically lead the economy to the level of full employment when decline in wages and prices stops. In the Pigou effect, interest elasticities and positions of the saving and investment functions are irrelevant.

The Pigou effect is illustrated in Figure 3.5 (A) and (B). To begin with Panel (A) of the figure, suppose the economy is at Y_1 level of income as determined by IS_1 and LM_0 functions at E_1 . Now wage-price deflation starts which raise the consumption function such that the IS_1 function shifts rightwards to IS_3 . Given the LM_0 function, the IS_3 function intersects the LM_0 function at E_3 thereby raising the income level from OY_1 to OY_F , the full employment level. Panel (B) of the figure shows that as the price level falls from P_3 to P_1 with reduction in money wages, income increases from OY_1 to the full employment level OY_F through the increase in aggregate demand is the Pigou effect. This is shown by the downwards sloping aggregate demand curve AD .

Criticisms of Pigou Effect

The Pigou effect has been criticized on the following grounds:

1. The Pigou effect assumes that the depressing effect of a reduction in the price level is offset by its stimulating effect on creditors. A price decline will have different reactions on debtors and creditors. Pigou overlooked the possibility of microeconomic distributional effects.
2. The Pigou effect considers only the effects of a change in real balances on consumption or saving of the household sector. It neglects the influence of real balances on firms.
3. Pigou's analysis assumes a definite knowledge about the effect of saving or consumption of an increase in the real balances which is not always true.
4. The Pigou effect is difficult to weigh quantitatively. It also neglects the role of price expectations.

Keynes effect

The Keynes effect is a term used in economics to describe a situation where a change in interest rates affects expenditure more than it affects savings. As prices fall, a given nominal amount of money will become a larger real amount. As a result the interest rate will fall and investment demanded rise. Thus, the process of increase in investment and employment via reduction in money wages and interest rate is called the Keynes effect. According to Keynes, as money wages and prices fall, money incomes also fall which means an increase in real incomes. People will, therefore, need less money for transactions and precautionary purposes. Assuming no change in the supply of money, this means that people have more money in liquid for than they need. It will increase the demand for money for speculative purposes. They will therefore, invest surplus money in purchasing securities and bonds. The increase in the demand for such financial assets will raise their prices which will reduce the rate of interest. Falling interest rate, in turn will raise investment, national income and employment. Keynes effect works through a shift in the LM curve.

Classical Dichotomy

In macroeconomics, the classical dichotomy is the division between the real side of the economy and the monetary side. According to the classical dichotomy, changes in monetary variables do not affect real values as output, employment, and the real interest rate. Money is therefore neutral in the sense that it cannot affect these real variables. Thus, classical dichotomy refers to the idea that real and nominal variables can be analyzed separately. Thus, the notion that changes to the variables that affect monetary values will not impact real values such as interest rates, employment, industrial output is known as classical dichotomy. To be precise, an economy exhibits the classical dichotomy if real variables such as output, unemployment, and real interest rates can be completely analyzed without considering what is happening to nominal variables. In particular, this means that GDP and other real variables can be determined without knowing the level of the nominal money supply or the rate of inflation. Therefore, in an economy that exhibits the classical dichotomy, the money supply only affects nominal variables like the price level. An economy exhibits the classical dichotomy if money is neutral. It is a feature of many classical and new classical theories of macroeconomics. Thus, according to the classical dichotomy, the goods and money markets are separate and stated that the relative price level is determined by the demand and supply of goods and the absolute price level is determined by the demand and supply of money.

The classical dichotomy was central to the thinking of early economists (money as a veil). Keynesians and monetarists reject the classical dichotomy, because they argue that prices are sticky. That is, they think prices fail to adjust in the short run, so that an increase in the money supply raises aggregate demand and thus alters real macroeconomic variables. Thus, the classical dichotomy was integral to the thinking of some pre-Keynesian economists ("money as a veil") as a long-run proposition. Keynesians reject the classical dichotomy, because they argue that prices are sticky. That is, they think prices fail to adjust in the short run, so that an increase in the money supply raises aggregate demand and thus alters real macroeconomic variables.

The Real Balance Effect (Patinkin's Integration of Monetary Theory and Value Theory)

Don Patinkin in his monumental work, "Money, Interest and Prices" criticizes the dichotomization of goods and money markets by classical and has solved the classical dichotomy through his Real Balance Effect. According to the classical dichotomy, the relative price level is determined by the demand and supply of goods and the absolute price level is determined by the demand and supply of money. After criticizing the classical dichotomy, Patinkin integrates the money market and the goods market of the economy through his Real Balance Effect. The Real Balances mean the real purchasing power of the stock of cash holdings (Money) of the people.

According to Patinkin, when the price level changes, it affects the purchasing power of people's cash holdings which in turn, affects the demand and supply of goods. This is the real balance effect. Patinkin introduced the stock of real balances (M/P) held by community as an influence on their demand for goods. Thus, the demand for a commodity depends upon real balance as well as relative prices. If the price level rises, this will reduce the real balances (purchasing power) of the people who will spend less than before. This implies a fall in the demand for goods and the consequent fall in prices and wages. The price decline increases the value of money balances held by the people which, in turn, increase the demand for goods directly. The initial decrease in commodity demanded creates a state of involuntary

unemployment. But unemployment will not last indefinitely because as wages and prices fall, the real balance effect tends to increase commodity demand directly and indirectly through the interest rate. With sufficiently large fall in wages and prices, the full employment level of output and income will be restored. Finally, even if there is the liquidity trap, the expansion of the money supply will increase money balances and full employment can be restored through the operation of the real balance effect. Thus, absolute prices play a crucial role not only in the money market but also in the real sector of the economy. Patinkin also stated that the equilibrium values of relative prices, the rate of interest and the absolute price level are simultaneously determined by all the markets once the real and monetary data are specified.

Thus, Patinkin removed the classical dichotomy and integrated the monetary and value theory through the real balance effect. He also validates the classical quantity theory. According to Patinkin's Real Balance effect, people do not suffer from money illusion as they are interested in the real value of their cash holdings. This means that a doubling of the quantity of money will lead to a doubling of the price level, but relative prices and the real balances will remain constant and the equilibrium of the economy will not be changed. Thus, Patinkin argued that the classical dichotomy was inconsistent.

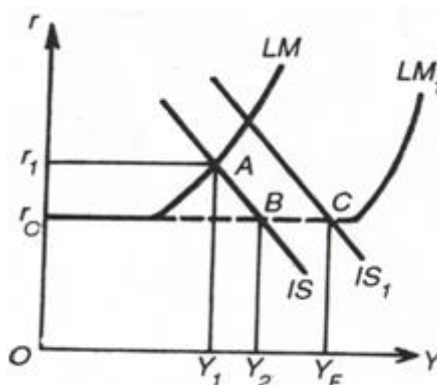


Figure 3.6 Real Balance Effect

The real balance effect is illustrated by using the IS and LM technique in the figure 3.6. We know that IS curve represents the goods market and LM curve represents the money market. Assume that the economy is in equilibrium at OY_1 level of income when the IS and LM curves intersect at point A where the interest rate is Or_1 . Assume that full employment level is Y_F unemployment is $Y_1 - Y_F$ which causes wages and prices to fall simultaneously. This results in an increase in the real value of people's money holdings which shifts the LM curve to the right as LM_1 . It intersects the IS curve at point B making the level of income OY_2 with the result that the interest rate falls to Or_0 , which stimulates investment, discourages savings and increases consumption. Even when the interest rate falls to its minimum level Or_0 , the level of demand in the commodity market as represented by the IS curve is not high enough to lead the economy to the full employment level OY_F . Rather unemployment measured by $Y_2 - Y_F$ remains in the economy. This much unemployment leads to a further fall in wages and prices, and to the increase in demand for consumption goods which shifts the IS curve to the right to IS_1 so that it intersects the LM_1 curve at point C at the full employment level OY_F . Thus, under conditions of wage and price flexibility when the IS and LM curves shift rightwards, the real balance effect ultimately leads the economy to the full employment level, even in the liquidity trap situation as above when investment is interest elastic.

Thus, the real balance effect eliminates the classical dichotomy between value and monetary theory and it also validates the conclusions of the quantity theory of money is neutral and the interest rate is independent of the quantity of money through the real balance effect. It also establishes the wage price flexibility that leads to full employment equilibrium in the long run.

The Criticisms against the Real Balance Effect

The major criticism against the real balance effect came from Harry G Johnson, Archibald and Lipsey and others.

1. Not Applicable in Equilibrium Situations: It is pointed out that there is no need for the real balance effect so long as the real analysis is confined to equilibrium situations. The real balance is needed only to ensure the stability of the price level and not to determine the real equilibrium of the system.
2. Conceptually Inadequate: Archibald and Lipsey regard Patinkin's analysis of the real balance effect as conceptually inadequate.
3. Price Stability without Real Balance Effect: Patinkin has been criticized for holding the classical view that people do not suffer from money illusion that their behavior is influenced by the real balance effect.

CONCEPT OF FULL EMPLOYMENT AND VOLUNTARY UNEMPLOYMENT:

Introduction

By employment is meant an engagement of a person in some occupation, business, trade or profession, etc. and lack of it may be called as unemployment. The problem of unemployment has become a colossal. Various problems have caused this problem. There are individual factors like age, vocational unfitness and physical disabilities which restrict the people. External factors include technological and economic factors. There is enormous increase in the population. Unemployment has been one of the most serious problems affecting the countries of the world for the last many decades and it is more serious recently as a result of the world economic recession. Governments all over the world have been trying to reduce the incidence of unemployment. When the economy is in equilibrium at less than full employment level of output, unemployment exists. There are several types of unemployment depending up on the different factors which cause it. Further, the nature and causes of unemployment in developing countries like India are different from those of developed countries. One of the frequent causes of labour unrest in modern societies, both developed and developing, is unemployment among workers and the insecurity of employment. Full employment has therefore become the goal of all countries.

Meaning of Unemployment

Unemployment (or joblessness), as defined by the International Labour Organization, occurs when people are without jobs and they have actively sought work within the past four weeks. The unemployment rate is a measure of the prevalence of unemployment and it is calculated as a percentage by dividing the number of unemployed individuals by all individuals currently in the labour force. Thus, unemployment is defined as a state of affairs when in a country there are large number of able-bodied persons of working age who are willing to work but cannot find work at the current wage rate. People who are either unfit for work for physical or mental reasons, or don't want to work are excluded from the category of unemployment. Mere engagement in some productive occupation does not necessarily mean absence of unemployment. People, who are only partially employed or are engaged in inferior jobs, though they can do better jobs, are not adequately employed. It is called a state of underemployment which is equally bad for the prosperity of a country.

TYPES OF UNEMPLOYMENT

Frictional Unemployment

Frictional unemployment is the time period between jobs when a worker is searching for, or transitioning from one job to another. It is sometimes called search unemployment and can be voluntary based on the circumstances of the unemployed individual. Frictional unemployment is always present in an economy, so the level of involuntary unemployment is properly the unemployment rate minus the rate of frictional unemployment, which means that increases or decreases in unemployment are normally under-represented in the simple statistics. Frictional unemployment exists because both jobs and workers are heterogeneous, and a mismatch can result between the characteristics of supply and demand. Such a mismatch can be related to skills, payment, work-time, location, seasonal industries, attitude, taste, and a multitude of other factors. New entrants (such as graduating students) and re-entrants (such as former homemakers) can also suffer a spell of frictional unemployment. Workers as well as employers accept a certain level of imperfection, risk or compromise, but usually not right away; they will invest some time and effort to find a better match. This is in fact beneficial to the economy since it results in a better allocation of resources. However, if the search takes too long and mismatches are too frequent, the economy suffers, since some work will not get done. Therefore, governments will seek ways to reduce unnecessary frictional unemployment through multiple means including providing education, advice, training, and assistance such as daycare centers.

Seasonal Unemployment

Seasonal unemployment may be seen as a kind of structural unemployment, since it is a type of unemployment that is linked to certain kinds of jobs (construction work, migratory farm work). This type of unemployment arises because of the seasonal nature of a particular productive activity so that people become unemployed during the slack season. Thus, seasonal unemployment results from seasonal fluctuations in demand. Indian agriculture is a seasonal operation so that the farmers remain unemployed during off seasons although they are employed during harvesting and sowing seasons. Another example for seasonal unemployment is ice-cream sellers as they remain unemployed during winter seasons. The most-cited official unemployment measures erase this kind of unemployment from the statistics using "seasonal adjustment" techniques.

Cyclical Unemployment

Cyclical unemployment arises due to cyclical fluctuations in the economy. Thus, cyclical unemployment relates to the cyclical trends in growth and production that occur within the business cycle. When business cycles are at their peak, cyclical unemployment will be low because total economic output is being maximized. When economic output falls, the business cycle is low and cyclical unemployment will rise. Economists describe cyclical unemployment as the result of businesses not having enough demand for labor to employ all those who are looking for work. Advanced capitalist countries have been suffering this type of unemployment. This type of unemployment greatly increases during recession and depression. This type of unemployment is due to the fact that the total effective demand of the community is not sufficient to absorb the entire production of goods that can be produced with the available stock of capital. Thus, a change in unemployment levels that can be tied to cyclical economic changes in the market such as recession, recovery, growth and decline are called cyclical unemployment. The reason for calling this type of unemployment as cyclical is that it is usually linked to a country's business cycle.

Structural unemployment

Structural unemployment is a form of unemployment resulting from a mismatch between demand in the labour market and the skills and locations of the workers seeking employment. Even though the number of vacancies may be equal to, or greater than, the number of the unemployed, the unemployed workers may lack the skills needed for the jobs; or they may not live in the part of the country or world where the jobs are available. Structural unemployment is a result of the dynamics of the labour market and the fact that these can never be as flexible as, e.g., financial markets. Workers are "left behind" due to costs of training and moving, plus inefficiencies in the labour markets, such as discrimination or monopoly power. Structural unemployment is hard to separate empirically from frictional unemployment, except to say that it lasts longer. As with frictional unemployment, simple demand-side stimulus will not work to easily abolish this type of unemployment. Structural unemployment may also be encouraged to rise by persistent cyclical unemployment: if an economy suffers from long-lasting low aggregate demand, it means that many of the unemployed become disheartened, while their skills become obsolete. Problems with debt may lead to homelessness and a fall into the vicious circle of poverty. This means that they may not fit the job vacancies that are created when the economy recovers.

Technological Unemployment

Technological unemployment is caused by the replacement of workers by machines or artificial intelligence technology. Thus this type of unemployment is caused by technological changes or new methods of production in an industry or business. Modern production process is essentially dynamic where innovations lead to the adoption of new machineries and inventions thereby displacing existing workers leaving behind as unemployed.

Voluntary Unemployment

The voluntary unemployment is unemployment deliberately chosen by the person concerned. This could be because of a desire to refrain from work, or because they are searching for better opportunities. Thus, voluntary unemployment is unemployment that results when labourers who are able to engage in production choose not to do so. These are resources (especially labor) that decide to leave one job, often in search of another. The contrast to voluntary unemployment is involuntary unemployment, in which resources are forced out of work. In this type of unemployment a person is out of job of his own desire doesn't work on the prevalent or prescribed wages. Either he wants higher wages or doesn't want to work at all. It is in fact social problem leading to social disorganization.

Though there have been several definitions of voluntary and involuntary unemployment in the economics literature, a simple distinction is often applied. Voluntary unemployment is attributed to the individual's decisions, whereas involuntary unemployment exists because of the socio-economic environment (including the market structure, government intervention, and the level of aggregate demand) in which individuals operate. In these terms, much or most of frictional unemployment is voluntary, since it reflects individual search behavior. Voluntary unemployment includes workers who reject low wage jobs whereas involuntary unemployment includes workers fired due to an economic crisis, industrial decline, company bankruptcy, or organizational restructuring.

Involuntary Unemployment

In this type of situation the person who is unemployed has no say in the matter. It means that a person is separated from remunerative work and devoid of wages although he is capable of earning his wages and is also anxious to earn them. Forms and types of unemployment according to Hock are.

There remains considerable theoretical debate regarding the causes, consequences and solutions for unemployment. Classical economics, neoclassical economics argue that market mechanisms are reliable means of resolving unemployment. These theories argue against interventions imposed on the labour market from the outside, such as unionization, minimum wage laws, taxes, and other regulations that they claim discourage the hiring of workers.

Keynesian economics emphasizes the cyclical nature of unemployment and recommends interventions it claims will reduce unemployment during recessions. This theory focuses on recurrent supply shocks that suddenly reduce aggregate demand for goods and services and thus reduce demand for workers. Keynesian models recommend government interventions designed to increase demand for workers; these can include financial stimuli, publicly funded job creation, and expansionist monetary policies.

The Concept of Full Employment

In macroeconomics, full employment is a condition where all persons willing and able to work at the prevailing wages and working conditions are able to work. Thus, full employment would be the situation where everyone willing to work at the going wage rate is able to get a job. This would imply that unemployment is zero because if you are not willing to work then you should not be counted as unemployed. To be classified as unemployed you would need to be actively seeking work. This does not mean everyone of working age is in employment. Some adults may leave the labour force, for example, women looking after children.

However, full employment does not mean that everyone is employed. Some people like children, old men and physically handicapped people are not able to work as they are not included in the labour force of the country. Full employment will exist in spite of their not working. The idle rich though able to work are not willing to work because they get enough unearned incomes to live. Thus, unemployed are those who are involuntarily idle. They are able and willing to work but the economy does not provide them jobs. Thus, full employment is said to exist in the economy even if there is prevailing some amount of frictional and seasonal unemployment in the economy. Thus, full employment is a state of the economy in which all eligible people who want to work can find employment at prevailing wage rates. However, it does not imply 100 percent employment because allowances must be made for frictional unemployment and seasonal factors.

The Classical view of Full Employment

The classical economists were of the view that in a free competitive economy, unemployment cannot exist for an indefinite period. If anyone remains jobless for a considerable period of time, then it can be only due to the fact that he is demanding more wages than that he is really worth for. They believed that in order to avoid this prolonged unemployment, the worker should accept wage cuts. The classical economists, however, admitted that in short period unemployment can exist due to various reasons. For example, some unemployment may be caused by the introduction of machinery and other labor saving devices in the factory or it may be due to industrial disputes which lead to temporary unemployment among the factory workers. Some unemployment can also exist in factories for a part a year where the work is carried out seasonally.

The classical economists always believed in the existence of full employment in the economy. To them full employment was a normal situation and any deviation from this was regarded as something abnormal. According to Pigou, the tendency of the economic system was to automatically provide full employment in the labour market. Unemployment resulted from the rigidity in the wage structure and interference in the working of free market system by trade unions. Full employment exists when everybody who at the running rate of wages wishes to be employed. Those who are not prepared to work at the existing wage rate are not unemployed in the Pigouvian sense because they are voluntarily unemployed. There is, however, no possibility of involuntary unemployment in the sense that people are prepared to work but they do not find work. However, the classical view of full employment is consistent with some amount of frictional, voluntary, seasonal or structural unemployment.

Classical unemployment

Classical economists suggest that the invisible hand of free markets will respond quickly to unemployment and underutilization of resources by a fall in wages followed by a rise in employment. Classical or real-wage unemployment occurs when real wages for a job are set above the market-clearing level, causing the number of job-seekers to exceed the number of vacancies. Most economists have argued that unemployment increases the more the government intervenes into the economy to try to improve the conditions of those without jobs. For example, minimum wage laws raise the cost of laborers with few skills to above the market equilibrium, resulting in people who wish to work at the going rate unemployed. Laws restricting layoffs made businesses less likely to hire in the first place, as hiring becomes more risky, leaving many young people unemployed and unable to find work. However, this argument is criticized for ignoring numerous external factors and overly simplifying the relationship between wage rates and unemployment as other factors may also affect unemployment.

Keynesian theory of unemployment

Keynesian unemployment, also known as deficient-demand unemployment, occurs when there is not enough aggregate demand in the economy to provide jobs for everyone who wants to work. Demand for most goods and services falls, less production is needed and consequently fewer workers are needed. Wages are sticky and do not fall to meet the equilibrium level, and mass unemployment results. With cyclical unemployment, the number of unemployed workers exceeds the number of job vacancies, so that even if full employment was attained and all open jobs were filled, some workers would still remain unemployed. Keynesian economists see the lack of demand for jobs as potentially resolvable by government intervention. They suggested government interventions through deficit spending a measure to boost employment and demand.

Keynesian View of Full Employment

According to J.M. Keynes, full employment is the absence of involuntary unemployment. Thus, full employment is a situation in which everybody who wants to work gets work. It should be noted that the full employment is consistent with frictional and voluntary unemployment. According to him, unemployment can only take place when the current demand for goods and services is not sufficient to absorb the available labour into different occupations. Employment depends on spending of the whole income of the people either on consumption or on investment goods. As the level of money income increases in a community, people tend to spend a smaller portion of their income on immediate consumption. So there will be a deficiency of return to entrepreneurs. They try to cut down the volume of employment they offer to the factors. This tendency may be counteracted if investment in capital goods expands sufficiently. But in a wealth country, there may be comparatively less new opportunities for investment. Hence the necessary increase in the volume of investment may be not made with the result that a portion of labor force is unable to find employment. To achieve full employment, Keynes advocates increase in effective demand to increase employment.

Measures to Achieve Full Employment

As unemployment and underemployment is caused by deficiency in effective demand, full employment can be achieved by increasing effective demand. It is possible through an increase in investment or consumption or both. Hence, full employment can be achieved by using fiscal policy by governments and also by the monetary measures by the central bank of a country.

Module IV

Keynesian Macro Economic Model

Consumption function – Psychological Law of Consumption – Determinants of Consumption – APC and MPC – APS and MPS – Paradox of thrift – Income, Consumption and Saving relationship – Investment function – determinants of investment — MEC, MEI and the role of Expectations – Principle of Effective Demand – Underemployment equilibrium – Wage. Price rigidity – Determination of Income in two and three sectors (using Keynesian Cross diagrams and algebra)

Consumption Function

One of the important tools of the Keynesian economics is the consumption function. A consumption function is a functional statement of relationship between consumption expenditure and its determinants. Although, consumption expenditure of households depends on a number of factors such as income, wealth, rate of interest, expected future income, life style, age, sex etc; income is the primary determinant of consumption. Given this dictum, the consumption function or propensity to consume refers to the income consumption relationship. As the demand for a commodity depends upon its price, consumption of a commodity depends upon the level of income. In other words, consumption is a function of income. The consumption function relates the amount of consumption to the level of income. It is the functional relationship between two aggregates, that is, total consumption and the gross national income.

Symbolically, the consumption function can be represented as $C = f(Y)$, where, 'C' is the consumption, 'Y' is income and 'f' if the functional relationship. Thus, the consumption function indicates a functional relationship between C and Y, where C is the dependent variable and Y is the independent variable. That is, C is determined by Y. This relationship is based on the ceteris paribus assumption. As such only income consumption relationship is considered and all other possible influences on consumption such as wealth, rate of interest, expectations about future income, life style, age and sex etc are held constant.

Consumption function should be carefully distinguished from the amount of consumption. By consumption function we mean the whole schedule which describes the amount of consumption at various levels of income whereas the amount of consumption means the amount consumed at specific level of income.

A hypothetical consumption schedule is given below

Income (in Rs)	Consumption (in Rs)
1000	750
1100	825
1200	900
1300	975
1400	1050
1500	1125

Although Keynes postulated a non-linear consumption function, it is a convention in the modern interpretation of Keynesian macro economics to use a linear consumption function. A linear consumption function can be expressed as

$$C = a + b Y$$

Where C is the aggregate consumption expenditure and Y is the total disposable income. The term 'a' is the positive intercept coefficient that denotes the level of consumption when income is zero. The amount of consumption at zero income level is called autonomous consumption. The term 'b' is the positive constant that represents the slope of consumption function.

Keynes thought that income is the primary determinant of consumption and that the rate of interest does not have an important role. This conjecture stood in stark contrast to the belief of classical economist who preceded him. The classical economist held that a higher interest rate encourages savings and discourages consumption. Keynes admitted that the interest rate could influence consumption as a matter of theory. Yet, he believed that short period influence of interest rate on individual spending out of a given income is secondary and relatively unimportant.

Properties or Technical Attributes of Consumption Function

The consumption function has two technical attributes or properties. They are

- 1) Average Propensity to Consume (APC)
- 2) Marginal Propensity to Consume (MPC)
- 1) Average Propensity to Consume (APC)

The APC is the ratio of consumption expenditure to any particular level of income. It is calculated by dividing consumption expenditure by income. That is $APC = C/Y$. APC is usually expressed in percentages. In the above consumption schedule, when income is Rs.1000, consumption expenditure is equal to Rs.750. Therefore, APC is $750/1000 = 0.75$ or 75%.

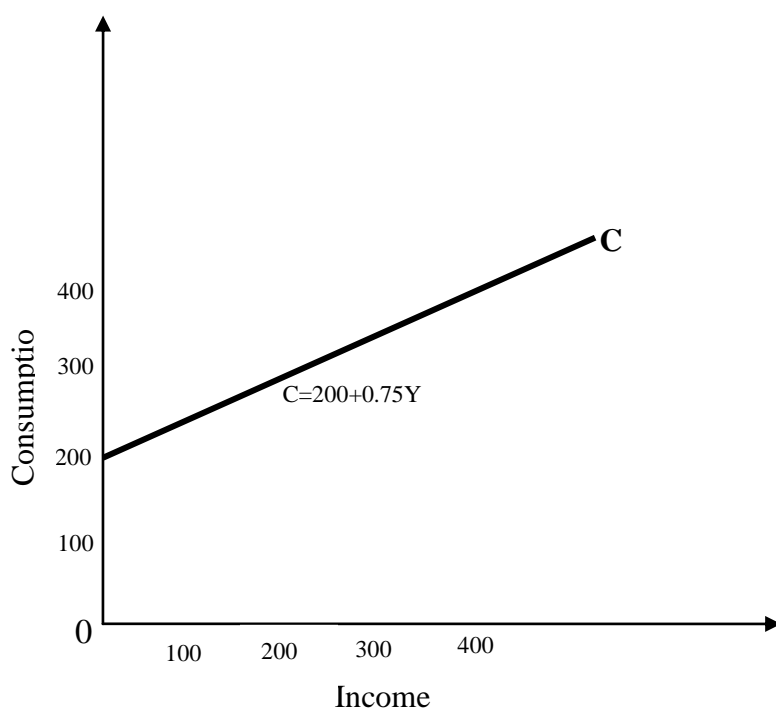
- 2) Marginal Propensity to Consume (MPC)

MPC refers to the relationship between marginal income and marginal consumption. It may be defined as the ratio of the change in consumption to the change in income. That is, MPC is found by dividing the change in consumption by the change in income. Thus, $MPC = \Delta C/\Delta Y$. It is the ratio of additional consumption to additional income. In the above consumption schedule, when income increases from Rs.1000 to Rs.1100, the consumption increases from Rs.750 to Rs.825. Here, the increment in income is Rs.100 and increment in consumption is Rs.75. Therefore, MPC which is $\Delta C/\Delta Y$ is equal to $75/100 = 0.75$.

Geometrically, MPC equals the slope of the consumption function. If the consumption function is a straight line (linear consumption function), MPC will be the same for any change in income. For example, if the consumption function take the following linear form

$$C = 200 + 0.75Y$$

Then, the $MPC = 0.75$ which is the slope of the consumption function. This linear consumption function is graphically shown below.



Keynes is concerned primarily with the MPC because his analysis pertains to the short run while APC is useful in the long run analysis. MPC is assumed to be positive and less than unity ($0 < MPC < 1$) which means that when income increases, the whole of it is not spent on consumption. Thus, MPC will be low in the case of richer people and high in the case of poor. MPC was crucial to Keynes policy recommendations for how to reduce widespread unemployment. The power of fiscal policy to influence the economy arises from the feedback between income and consumption.

Keynes's Psychological Law of Consumption

Keynes propounded the fundamental psychological law of consumption in his famous book "General Theory of Employment, Interest and Money" (1936) which forms the basis of consumption function. The law is a statement of psychological tendencies of the community with respect to consumption spending. It explains, given the level of income and the propensity to consume, how the people allocate their incomes between consumption and saving. Psychological law of consumption is considered as the most notable and revolutionary contribution of Keynes to the macro economic analysis. Instead of relying on statistical analysis, Keynes made conjectures about consumption based on introspection and casual observation.

Keynes stated his fundamental psychological law as follows ".....men are disposed, as a rule and on the average, to increase their consumption as their income increases, but not as much as the increase in income". In other words, as income increases, people will spend part but not all of the increase, choosing instead to save some part of it. The law implies that there is a tendency on the part of the people to spend on consumption less than the full increment of income. There exist a non-proportional relationship between consumption and income which suggests that rising aggregate income should be associated with a higher national saving rate.

Propositions of the Law

Keynes's fundamental law of consumption essentially consists of three related propositions:

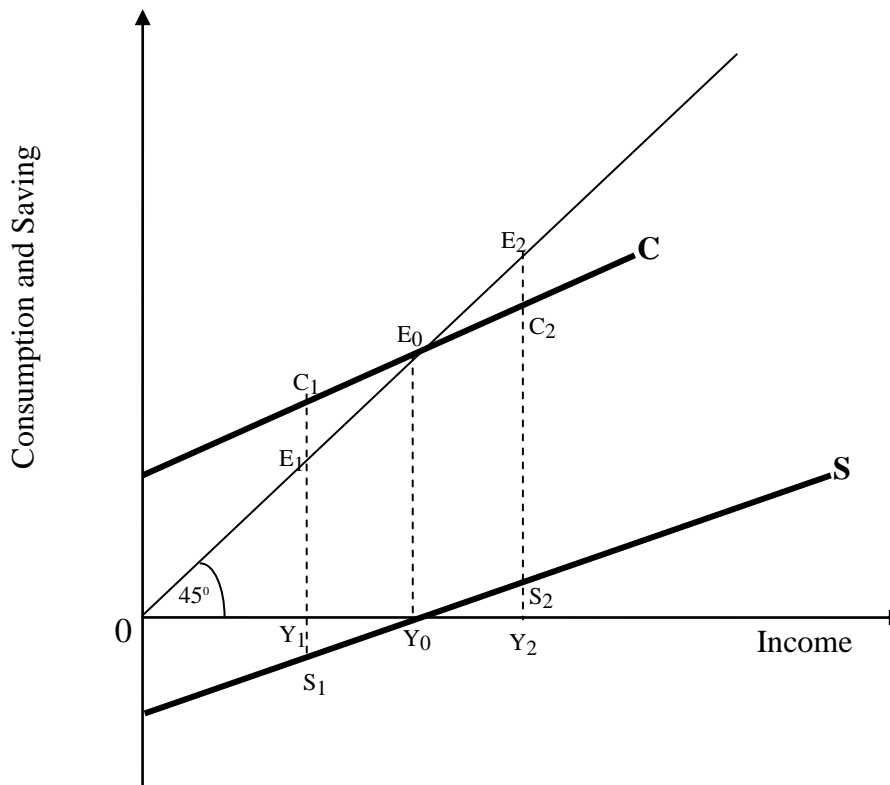
1. When income increases, consumption expenditure also increases but by a somewhat smaller amount. The reason is that as income increases, people's wants are satisfied side by side, so that the need to spend more on consumer good diminishes. As many of the wants have already been satisfied, there is less pressure to raise consumption in proportion to rise in income. Thus, though consumption expenditure increases with the increase in income, it increases less than proportionately. This proposition means that MPC is positive but less than unity ($0 < MPC < 1$) in normal circumstances.
2. The increased income will be divided in some proportion between consumption expenditure and saving. As a matter of fact, the second proposition is a corollary to the first proposition. When the whole increased income is not spend on consumption, the remaining is saved. In this way, consumption and saving move together. That is, $\Delta Y = \Delta C + \Delta S$.
3. Increase in income always leads to an increase in both consumption and saving. This means that an increment in income is unlikely to lead either to less consumption or less saving than before. This is based on the above propositions because as income increases, consumption also increases but by a smaller amount which also leads to an increased savings. Thus, with increased income, both consumption and saving increases.

These three propositions of Keynesian fundamental law of can be verified with the help of following hypothetical table.

Income (Y) (in Rs)	Consumption (C) (in Rs)	Saving (S = Y - C) (in Rs)
0	20	-20
60	70	-10
120	120	0
180	170	10
240	220	20
300	270	30
360	320	40

The table reveals that even when income is zero people spend out of their past savings. As income increases, consumption also increases but not as much as the increase in the income. For instance, as income increases by Rs. 100, the increase in consumption is Rs.50. The value of marginal propensity to consume is less than one. To be exact it is 0.83. With each increase in income consumption also increases but by a smaller amount (proposition 1). The increment in income is divided between saving and consumption (proposition 2). When income increases from Rs. 240 to Rs.300, consumption increases by Rs. 50 and savings increases by Rs.10. As income increases from Rs 120 to 180, 240, 300 and 360, consumption also increases from Rs. 120 to 170, 220, 270 and 320 along with the increase in savings from Rs 0 to 10, 20, 30 and 40 respectively. The distribution of income between savings and consumption remains the same throughout the table. With the increase in income, neither consumption nor savings have fallen (proposition 3).

These propositions is illustrated in the following figure



In the figure, income is measured horizontally and consumption and saving are measured on the vertical axis. The line C is the consumption function which is the rising linear function of income. S is the supply function curve. The 45° line represents the zero saving line since at all points on this line $Y=C$. E_0 is the break-even point of the economy since at the level of income total income is consumed and there is neither net saving nor dissaving. At Y_1 level of income consumption is C_1Y_1 which is in excess of income so that there is negative saving or dissaving of the order of $S_1Y_1 (= C_1Y_1)$. At higher level of income Y_2 , consumption C_2Y_2 is less than income which is E_2Y_2 and the gap E_2C_2 reflects savings which is also equal to S_2Y_2 . When income increases from $0Y_0$ to $0Y_2$, consumption also increases but increase in consumption is less than the increase in the income (proposition 1). When income increases from $0Y_0$ to $0Y_2$, the increment in income is divided between consumption (C_2Y_2) and saving (S_2Y_2) (proposition 2). The figure also reveals that the growth in income leads to increased consumption ($C_2Y_2 > E_0Y_0$) and increased savings.

Assumptions of the Law

Keynes fundamental law of consumption is based on the following three assumptions:

- a) Constant Psychological and Institutional Complex

The law is based on the assumption that the psychological and institutional complexes influencing consumption tendencies remain constant. Such complexities are income distribution, tastes, habits, customs, populations growth etc. In short run, they do not change. The assumption suggests that consumption function is stable in the short run and that whatever changes take place in consumption spending in the short run are primarily due to the changes in income

b) Normal conditions

The law assumes that the conditions are normal in the economic system. There is no war, revolution, hyperinflation or any other abnormal or extra ordinary situations. Under abnormal conditions, the consumption behavior of the community is likely to diverge in a significant way from the short run consumption behavior and people may spend the whole of increased income on consumption leading a situation where MPC become equal to unity or even exceed unity.

c) Existence of laissez faire capitalist economy

Keynes also assumes a wealthy capitalist economy with the minimum government intervention in economic activities. People should be free to spend the increased income. In the case of regulations of private enterprise and consumption expenditures by the state, the law breaks down. The law becomes inoperative in socialist system since government regulates the flow of income and consumption spending in the country.

Implications or Importance of the Law

Keynes's fundamental law of consumption has assumed vital importance in the modern economic analysis. It enabled Keynes and his followers to explode many classical myths and beliefs and lay foundations of modern economic analysis and policy. That is why the psychological law of consumption is regarded as a major breakthrough in modern economics and is rightly termed as epoch-making contribution of Keynes to economic theory.

1. Invalidation of Say's Law

The most far-reaching implication of the law is that it invalidates the Say's law of market. According to the Say's law, every supply creates its own demand. Therefore, general over production and unemployment is not possible because adequate amount of aggregate demand is ever-present. Now, according to Keynes's psychological law, when income increases, consumption also increases but by a smaller amount. Since MPC is less than one, demand fails to increase with an increase in income or output and supply fails to create its own demand. Rather, supply exceeds demand which leads to general over production and glut of commodities in the market. This will also leads to general unemployment in the economy. Thus, Say's law of market is completely exploded and entire super structure of classical analysis collapses along with it.

2. Crucial importance of investment

Keynes's psychological law of consumption is important because it brings out crucial significance of investment for the determination of the level income and employment in a capitalist economy. The law stresses the vital point that people fail to spend the full increment of income on consumption. This tendency creates a gap between income and consumption which can only be filled by increased investment. Since consumption function is stable in the short run, the only alternative left to maintain the higher level of income and employment is wipeout the saving gap through amount of investment. Thus, investment assumes the most crucial and strategic importance in the economy. It is inadequacy of investment which results in unemployment and the remedy to overcome it is increase in investment.

3. Existence of underemployment equilibrium

The most significant departure of Keynes from the classical analysis is in respect to the underemployment equilibrium. Keynes's notion of underemployment equilibrium is based on the psychological law of consumption. As consumers do not spend the full increment of their income on consumption, there remains a deficiency of aggregate demand in the economy. Since MPC is less than unity, aggregate demand fails to increase to the full employment level and equilibrium is established short of full employment.

4. Need for state intervention

The deficiency of consumption spending necessitates either an increase in consumption spending or an increase in investment expenditure to the extent equal to the gap between consumption and saving. However, the short run stability of consumption function emphasizes the necessity of raising the investment expenditure. Since private investment cannot increase up to an amount that may offset the over saving gap, the only way out is the government intervention in the economic sphere by undertaking autonomous investment. Thus, when consumption does not increase by the full increment of income and consequently there is general overproduction and mass unemployment, the necessity of state intervention arises in the economy to maintain maximum possible level of employment and output.

5. Declining tendency of Marginal Efficiency of Capital

The psychological law points out that the marginal efficiency of capital or the expected rate of profitability has a tendency to decline in the capitalist countries. The reason is that as income increases, consumption does not increase to the same extent. As a result, there is a fall in demand and glut of commodities in the market and expected rate of profit also declines.

6. Permanent over saving gap

Since MPC is less than unity, consumption expenditure increases relatively less than the increase in income. This implies that every increase in income causes an accumulation of savings. However, the condition for additional investment will not be conducive because of the declining rate of increase in consumption spending. This led to the possibility of continued existence of over saving gap in the capitalist economy.

7. Process of income generation

Keynes's investment multiplier coefficient explains the process of income generation in an economy. The theory of multiplier states that when investment increases, income will increase by a multiple amount depending upon the magnitude of multiplier. The magnitude of the multiplier coefficient (k) is determined by the extent to which MPC is less than unity. In fact, the value of multiplier is $k = 1/1 - MPC$. The higher the MPC, the higher will be the value of multiplier and greater will be the expansion or generation of income in the economy.

8. Turning points of the business cycles

Keynes's fundamental law of consumption has made a significant breakthrough in the business cycle theory. It has tried to provide a satisfactory explanation to the turning points of the business cycles. Keynes point out that before the economy reaches the full employment level, the downturn starts because people fail to spend the full increment of their income on consumption. This leads to the fall in demand, over production, unemployment and decline in MEC. Conversely, the upturn in the economy starts before it reaches the stage of complete depression because as income falls, consumption also falls but less than the fall in income. So, when the excess stock of commodities is exhausted in the economy during the depression, the existence of consumer expenditure leads to the revival.

Determinants of the consumption function

By the determinants of consumption we mean the factors that influence the shape, position and slope of the consumption function. Keynes categorized consumption's non-income determinants into two broad groups but speculated that these non-income determinants were of minimum significance in explaining short run consumption. The two broad groups are

- I. Subjective factors
- II. Objective factors

Subjective factors primarily include the psychological attitude of the people towards consumption. They are psychological characteristics of human nature, social practices and institutional and social arrangements. Objective factors include changes in price level, fiscal policy, rate of interest, expectations, wealth etc which undergo rapid changes and can cause marked shifts in consumption function. The subjective and objective factors are explained below.

I. Subjective factors

As stated above, the subjective factors are the psychological characteristics of human nature, social practices and institutions, especially behavioral patterns of business firms and social arrangements affecting the distribution of income. According to Keynes, these subjective factors, though not alterable, are unlikely to undergo a material change over a short period of time except in abnormal circumstances.

A. Individual motives

Under the psychological characteristics of human nature, Keynes list out eight motives that make people to undertake less consumption spending or more saving. They are

- i. People save because they want to provide for unforeseen contingencies (precaution)
- ii. They want to provide for expected future needs (foresight)
- iii. People save from current income so as to use accumulated savings for investment which increase their future income (calculation)
- iv. People are motivated to save so that they can accumulate large wealth and improve the standard of living (improvement)
- v. People save to enjoy a sense of independence and power to do things (independence)
- vi. People save so that they can use them for speculative purposes (enterprise)
- vii. People save for the sake of leaving a good fortune for their heirs and children (pride)
- viii. People save because of their miserly instinct and habits (miserliness)

B. Business motives

Subjective factors also lead business firms to save from their incomes. Keynes have listed four motives for saving on the part of business firms.

- i. Enterprise: many business firms desire to save a part of their current income so that they can make investment in new enterprises and carryout expansion in future.
- ii. Liquidity: business firms are induced to save so that they can face contingencies in future. If they have good amount of liquid wealth in their hands, they would be able to meet emergencies and difficulties successfully.
- iii. Successful management: many managers of business firms are motivated to save to secure large incomes and to show successful management.
- iv. Financial prudence: business forms desire to save to provide adequate financial resources against depreciation in plant and machinery, to repay their debts etc.

II. Objective factors

The subjective factors explained above remain constant during short run and keep consumption function stable. But the objective factors undergo rapid changes and causes shifts in the consumption function. Objective factors which influence consumption are explained below.

(i) Changes in the general price level

The general price level is an important factor which influences the consumption of a community. When general price level increases, the consumption function shifts downwards because rise in price level cause fall in real value of the people's money balances. Similarly, fall in price level cause an upward shift in the consumption function.

(ii) Change in wage rate

If wage rate rises, the consumption function shifts upwards. The workers, having high MPC, spend more out of their increased income. However, if the rise in wage rate is accompanied by a more than proportionate rise in price level, the real wage rate will fall. This tends to shift consumption function downward.

(iii) Fiscal policy

Changes in fiscal policy, especially taxation policy affects the consumption function. Heavy commodity taxation adversely affects the consumption function. Likewise, when government reduces taxes, consumption of the people increases. At the same time, increased public expenditure on welfare programmes tends to shift the consumption function upward.

(iv) Rate of interest

Substantial changes in the market rate of interest may influence the consumption function indirectly. It is generally believed that higher rate of interest induces people to save more and this results in reducing their propensity to consume. But, this is not true in the case of all the people. Some individuals, who want a certain fixed income in future might consume more and save less when rate of interest goes up, as they can obtain the given fixed income with lesser savings.

(v) Windfall gains and losses

Unexpected changes in the stock market leading to gains or losses tend to shift the consumption function upward or downward. When the prices of shares go up, the shareholders begin to think themselves better off and it causes an upward shift in their consumption function. On the other hand, when the prices of share go down, the shareholders have to suffer sudden losses and tend to reduce their consumption.

(vi) Changes in expectations

Changes in expectations also affect the propensity to consume. When people expect war in the near future and expect prices to go up, they will try to spend more to meet the needs of current period. This shifts the consumption function upward. On the contrary, if the prices are expected to fall in future, people would buy only essential goods. It will lead to a fall in consumption demand and to a downward shift in consumption function.

(vii) Income distribution

Distribution of income and wealth in the society also determines the shape of consumption function. If the national income is more unequally distributed, the lower will be the propensity to consume. This is because propensity to consume of the rich is relatively less as compared to that of poor. If inequalities are reduced, the consumption function will shift upward because with the increase in income of the poor, their consumption expenditure will increase more than the reduction in the expenditure of the rich.

(viii) Stock of wealth

The stock of wealth owned by households is an important factor that determines the propensity to consume. Pigou attempted to explain the effect of an increased stock of wealth upon consumption and saving. He point out that with addition in real wealth, there is lesser tendency among wealth-holders to add further to their amount of wealth. This wealth effect leads to an increase in spending and upward shift in consumption function.

(ix) Consumer credit

The availability of easy credit causes an increase in consumption and shifts consumption function upwards. The easy credit terms permit an increased volume of consumer spending with the purchases occurring earlier than they otherwise would be. On the other hand, tightening of credit produces an opposite effect. That is, it causes a downward shift in the consumption function.

The Saving Function

Saving is defined as that part of disposable income which is not spend on consumption. We know that disposable income is either consumed or saved. Thus,

$$Y = C + S$$

$$S = Y - C$$

Where, Y= disposable income

C= consumption

S= saving

This is shown in the following table

Income	Consumption	Saving
0	20	-20
40	50	10
80	80	0
120	110	10
160	140	20

The saving function is the counterpart of the consumption function. Like consumption, saving is also a function of disposable income. Thus, saving function can be written as $S = f(Y)$. Given a particular consumption function, we can derive the saving function. For instance, given Keynesian linear consumption function

$$C = a + bY$$

The saving function can be easily derived as follows

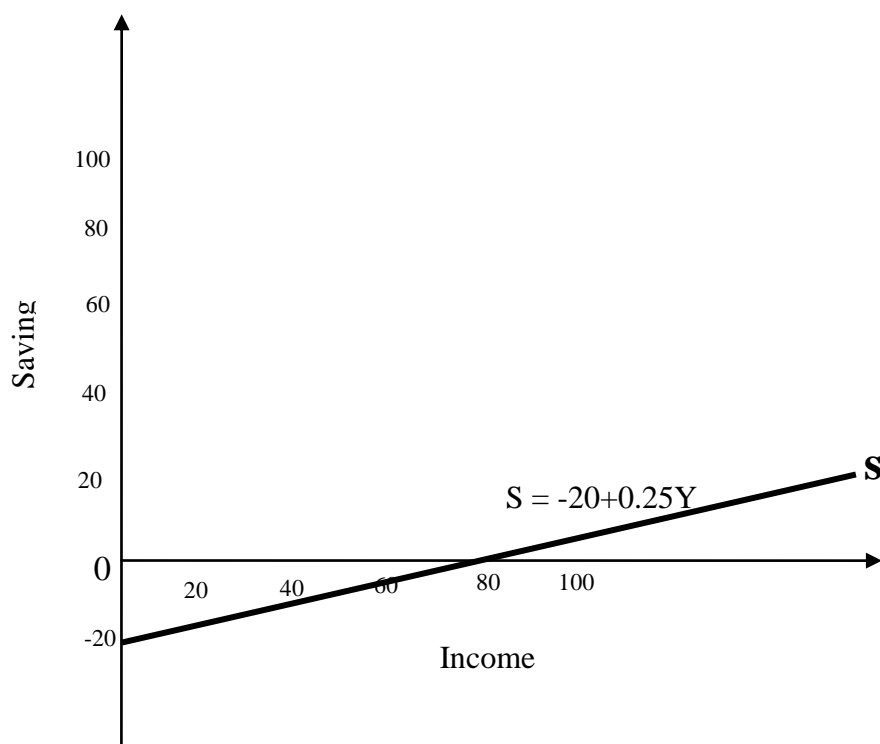
Since $S = Y - C$, we have $S = Y - (a + bY)$

$$S = Y - a - bY$$

That is, $S = -a + Y - bY$

Or $S = -a + (1 - b)Y$

In the equation, the term '1-b' is the value of marginal propensity to save, where 'b' is the value of marginal propensity to consume. In the above table, when income is zero, saving is -20. Savings are negative till income rises to Rs 80. Positive savings take place only after income rises above Rs 80. The saving function will take the form $S = -20 + 0.25Y$. The saving function is graphically presented below.



Average Propensity to Save

The saving counterpart to the APC is the average propensity to save or APS. APS is the proportion of the disposable income that is saved. Mathematically, APS is the ratio of saving to income. That is, $APS = S/Y$. For example, in the previous table, when income is Rs 160, Rs 20 is saved. Thus, $APS = S/Y = 20/160 = 0.125$. It should be noted that since income can either be consumed or saved ($Y = C + S$), the two ratios, that is APC and APS must add up to one. That is, $APC + APS = 1$ or $APS = 1 - APC$. Following our example, when income is Rs 160, $APS = 0.125$ and $APC = C/Y = 140/160 = 0.875$. Therefore, we have $0.125 + 0.875 = 1$

Marginal Propensity to Save

Whereas APS indicates the proportion of income that is saved, marginal propensity to save (MPS) represents how much of the additional disposable income is devoted to saving. Therefore MPS is the change in savings induced by the change in disposable income. As a saving counterpart of MPC, MPS is computed as the ratio of change in saving to change in income. Thus $MPS = \Delta S / \Delta Y$.

In the above table, when income increases from Rs 120 to Rs 160, the saving increases from Rs 10 to Rs 20. Here the increment in income is 40 and increment in savings is 10. Therefore, $MPS = \Delta S / \Delta Y = 10/40 = 0.25$. Since additional income is either be consumed or saved, the sum of marginal propensities of consume and save is equal to one. That is, $MPC + MPS = 1$ or $MPS = 1 - MPC$. If MPC is positive but less than one, then it follows that MPS must also be positive but less than one. Furthermore, if the MPC decreases steadily as income rises, then MPS must increase steadily as income rises because these two ratios must add up to one at all levels of income.

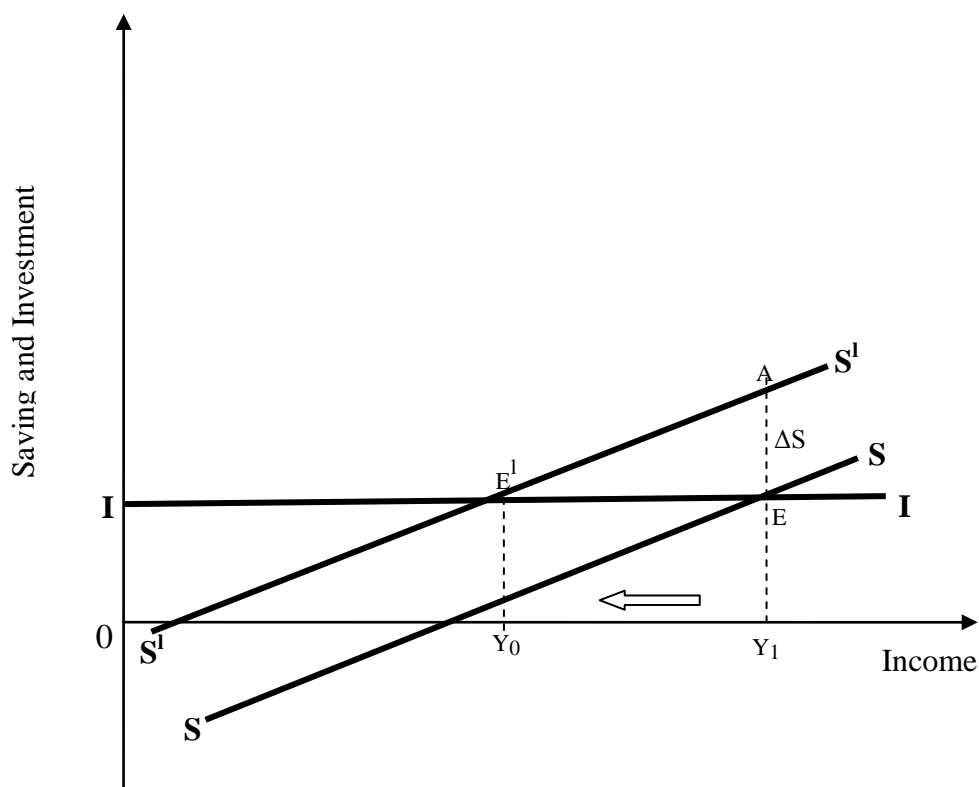
Paradox of Thrift

The classical writers maintained that hard work, restraint from consumption spending and thrift (desire to save more) are great economic virtues. Thriftiness or saving was regarded as an act of prudence on the part of individuals. According to classical prescriptions, minimum spending and highest possible

level of savings will always bring definite improvement in the individual's or firm's financial position. So thriftiness, according to them was key to prosperity. Savings determine investment which plays a crucial role in accelerating the rate of economic growth. They regarded savings not only a private but also a social virtue. An accumulation of savings by all individuals in the community would ensure higher rate of accumulation by the community and progressive growth of the economy would be easily realized. The logic is based on the well known classical assumption that savings and investment remain always balanced with each other

J M Keynes contradicted this widely held belief. In his opinion, savings is a virtue in the case of individuals but no for the society as a whole. The paradox of thrift emerges when all individuals in the society starts saving more than before out of the given level of income. The increased savings causes reduction in consumption spending. This will lower the aggregate demand for goods and services and cumulative decline in national income. As income falls, the investment activity will also go down considerably and hence the accumulation of social savings brings about eventual destruction of capital. Thus, paradox of thrift shows that the efforts to save more may actually deepen economic crisis and cause output and income to fall and unemployment to increase. It is called paradox because in their attempt to save more, the people have caused a decline in their income and consumption with no increase in the savings of the society at all.

The paradox of thrift is illustrated in the following figure



In the figure, the curve II is the planned investment curve. SS is the initial savings curve. The saving curve and investment curve intersects at point E to determine the initial equilibrium level of income Y_1 . At this equilibrium level of income, $S=I=EY_1$. Now suppose that expecting hard times ahead, society decide to become thrifty and all people try to increase savings say by AE. As a result, saving curve shifts upwards to S^1S^1 . The new saving curve and planned investment curve intersects at E^1 . Thus the equilibrium level of income falls from $0Y_1$ to $0Y_0$. The planned saving also falls from AY_1 to E^1Y_0 ($E^1Y_0 < AY_1$). The decline in the equilibrium level of savings shows the paradox of thrift.

The process through which the paradox of thrift works to reduce savings is the process of reverse multiplier because increased savings is virtually a withdrawal from circular flow of income. This implies that savings are not invested either because there is full employment or people do not want to invest due to higher risks. If the people decide to increase their savings by cutting down their consumption, their aggregate demand will fall resulting in unsold stock of goods and services. Then business firms will cut down their production. This leads to decline in incomes. Since saving is a function of income, a fall in income cause decline in savings. This process works until the economy reaches a new equilibrium point where savings equal investment.

Thus, according to Keynes, saving which is a private virtue is dangerous in aggregative sense and amounts to a social vice. The classical assertion that both individual and collective savings is a virtue hold valid in an economy perpetually at full employment where whatever saved is invested. The classical logic may also be true in inflation-ridden economy where an increase in aggregative savings is most desirable to alleviate the inflationary pressures. But classical maxim of accumulation of savings is quite inappropriate in under developed economies where any measure to restrict consumption is likely to aggravate the economic crisis. Some of the classical economist argues that paradox of thrift can be averted since increase in the savings would lead to fall in the rate of interest which would induce increase in the planned investment. But according to followers of Keynes, at times of recession or depression, the prospective yields from investment are so small that no possible reduction in the rate of interest will induce sufficient increase in investment. Thus, according to them, in a free market and private enterprise economy without government intervention paradox of thrift cannot be averted.

Investment Function

In Keynesian theories investment has been treated as the most volatile and strategic variable in all macroeconomic models. The investment expenditure not only affects the level of aggregate demand but also determines the productive capacity of the economy. Investment plays a crucial role in the determination of short run fluctuations in income or output and determination of the long term growth path of the economy.

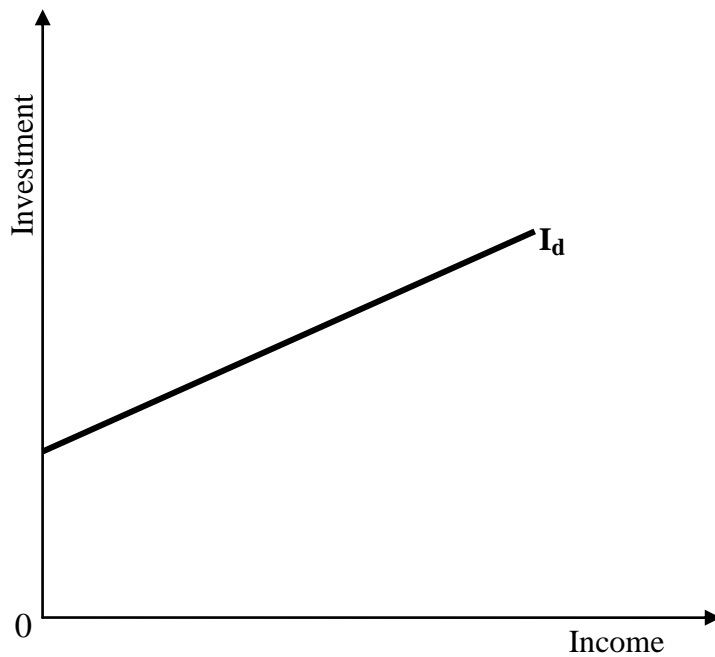
In the general sense of the term, investment means using or spending money on acquiring physical or financial asset and skills that yield a return over time. In Keynesian terminology, investment refers to real investment which adds to capital equipments. Real investment includes expenditures on new plant and machinery, construction of public works like roads, dams, buildings etc that creates income and employment. Thus, real investment means the addition to the stock of physical capital.

(i) Gross and Net investment

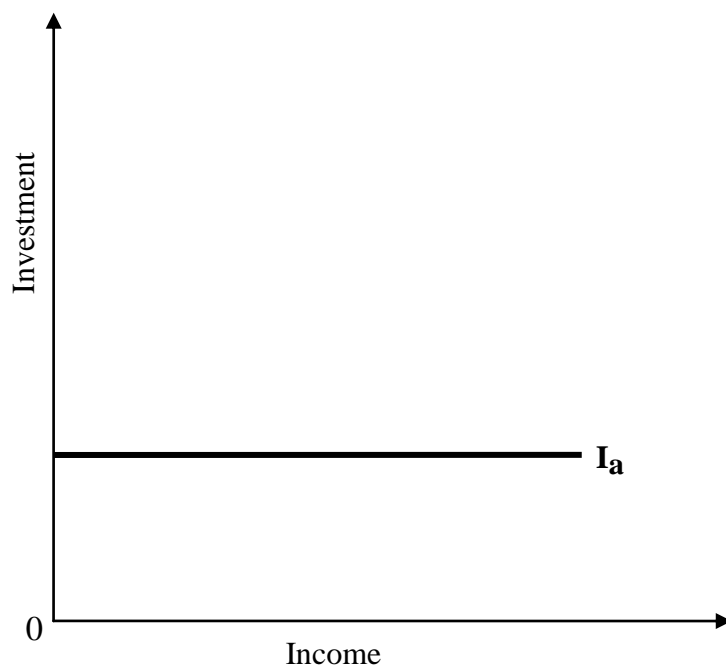
Gross investment is the flows of expenditure spend on new fixed capital goods or addition to the stock of raw materials and unsold consumer goods etc during an year. But some capital stock wears out every year and is used up for depreciation and obsolescence. Net investment is gross investment minus depreciation and obsolescence charges (or replacement investment). It is net addition to the existing capital stock of the economy. Thus, net investment is used to denote capital formation.

(ii) Induced and Autonomous investment

The investment expenditure which is related with the current income, output or interest rates is termed as induced investment. Induced investment is affected by changes in the level of income. When income increases, consumption demand also increases and to meet this investment increases. Keynes regarded rate of interest as a factor determining induced investment. Thus, general form of investment function is given by $I = f(Y, i)$ where 'Y' is income and 'i' is the rate of interest. But empirical evidence suggests that induced investment depend more on income than on the rate of interest. The following figure shows induced investment, where it can be seen that with the increase in income, induced investment also increases.



Autonomous investment refers to the investment which does not depend upon the changes in the income level. It is independent or autonomous of the level of income and is thus income inelastic. Changes in autonomous investment are caused by exogenous factors rather than the change in income or interest rate. These exogenous factors include technological innovations or inventions like introduction of new product into the market, growth of population and labour force, changes in the social and legal institutions, future expectations, war, revolutions etc. Most of the investment undertaken by the governments is autonomous in nature. These include expenditure on economic and social overheads like expenditure on roads, dams, schools, hospitals, power, communication etc. The autonomous investment is depicted in the following figure where it can be seen that whatever the level of income, investment remains the same at I_a . Thus, autonomous investment is shown as a curve parallel to the horizontal axis.



Determinants of Investment

There are three important elements involved that determines the level of aggregate investment expenditure in any time period. They are expected income flow from project, the cost of the project and the market rate of interest. In Keynes's theory of investment he sums up these factors in the concepts of Marginal Efficiency of Capital (MEC) and Marginal Efficiency of Investment (MEI)

Marginal Efficiency of Capital

The marginal Efficiency of Capital (MEC) is the highest rate of return expected from an additional or marginal unit of a capital asset over its cost. In general terms, MEC may be defined as the highest return over the cost expected from producing an additional unit of the most profitable of all categories of the capital asset.

To estimate the MEC, the entrepreneur will take into consideration how much he has to pay for the particular capital asset. The price which he has to pay for the particular capital asset is called the supply price of capital. The second thing which the entrepreneur will consider is that how many yields he expects to obtain from investment from that capital asset. He has to estimate the prospective yield from a capital asset over its life period. Thus the supply price and prospective yield of a capital asset determine the MEC. K K Kurihara points out that MEC is the ratio between the prospective yield of additional capital goods and their supply price. Algebraically, it may be stated as $i=y/p$ where 'i' is MEC, 'y' is the prospective yield of capital asset per unit of time and 'p' is the supply price.

If the annual yield over a series of years is Rs 5000 and the supply price of the capital asset is Rs 40000, then $i = y/p = 5000/40000 \times 100 = 12.5\%$. An increase in the prospective yield (y) will raise MEC. On the contrary, an increase or decrease in the supply price (p) of the capital asset, given the expected yield, will reduce or raise the MEC (i). Thus, 'i' is directly related to the prospective yield and inversely related to the supply price of the capital asset.

In a more generalized sense, Keynes has defined MEC as "the rate of discount which would make the present value of the series of annuities given by the returns expected from the capital asset during its life just equal to its supply price". Thus, according to Keynes, MEC is the rate of discount which renders the prospective yields from a capital asset over its life period equal to the supply price of that asset. Therefore, MEC can be obtained as

Supply price = discounted prospective yields

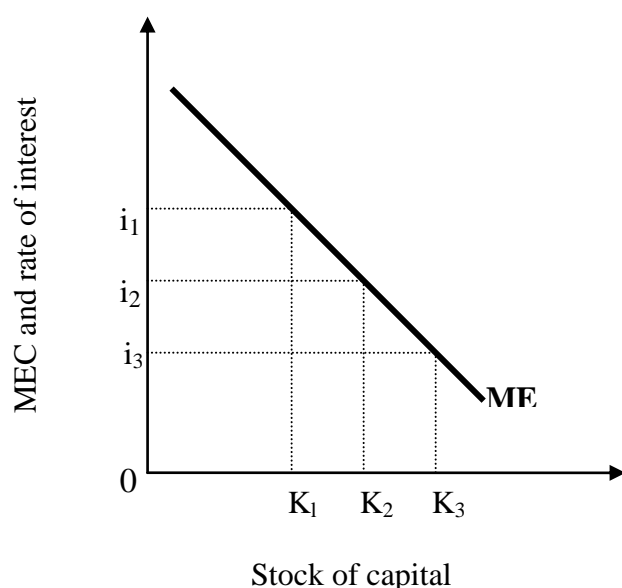
$$C = \frac{R_1}{1+i} + \frac{R_2}{(1+i)^2} + \frac{R_3}{(1+i)^3} + \dots + \frac{R_n}{(1+i)^n}$$

In the formula, C stands for the supply price of the capital asset, R1, R2, R3...Rn represents the series of prospective yields whose present worth is computed by discounting them at a certain rate such that the sum of the discounted prospective yields becomes equal to the supply price of the capital asset and i is the rate of discount or MEC. Suppose that the supply price of the capital asset which yields return for two years is Rs 1000. The expected yield for two years is Rs 550 and Rs 605. Then, by solving we will get the unique rate of discount or MEC which equates the discounted prospective yields with the supply price as 10%. That is,

$$C = \frac{R_1}{1+i} + \frac{R_2}{(1+i)^2}$$

$$C = \frac{550}{1+10/100} + \frac{605}{(1+10/100)^2} \quad 1000 = 500 + 500$$

The entrepreneurs can compute MEC for any capital good once he gets its cost and stream of income expected from it. By comparing the MEC with the current market rate of interest he can find out whether the contemplated investment is profitable or unprofitable. In the above illustration, we found MEC to be 10%. If the interest rate is 9%, then the investment would be profitable. But if the interest rate is 11%, it would be considered unprofitable. The MEC will vary when more is invested in a given particular capital asset. In any given period of time, the MEC from every capital asset will decline as more investment is undertaken in it. The main reason for the decline in investment with the increase in investment is that the prospective yield from capital asset falls as more units are installed and used for the production of the good. The second reason for the decline in the MEC is that the supply price of the capital asset may rise due to the increase in demand for it. Thus, we can represent MEC as a curve which will slope downwards. The MEC curve is depicted below.



In the figure, as capital stock increases the MEC falls. It can be seen that when capital stock is Ok_1 , the MEC is $0i_1$. As capital stock increases to Ok_2 MEC falls to $0i_2$. Likewise, when capital stock rises to Ok_3 , MEC further diminishes to $0i_3$.

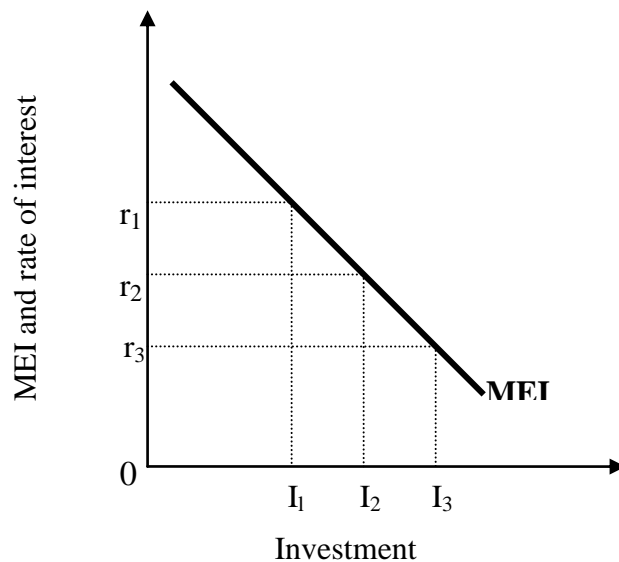
Marginal Efficiency of Investment

The concept of marginal efficiency of investment (MEI) is the general form of Keynes's concept of marginal efficiency of capital. MEI is the rate of return expected from a given investment on a capital asset after covering all its cost except the rate of interest. Like the MEC, it is the rate which equates the supply price of a capital asset to its prospective yield. That is, MEI is the unique rate of discount which can equate the present value of the expected returns from the given investment to the cost of financing that project. It can be expressed as

$$C = \frac{R_1}{1+d} + \frac{R_2}{(1+d)^2} + \frac{R_3}{(1+d)^3} + \dots + \frac{R_n}{(1+d)^n}$$

Here, R_1, R_2, \dots, R_n are the expected yield or returns from the given investment. C is the cost of borrowing or cost of financing the given investment project. 'd' is MEI which is the rate of discount that equates the sum of discounted value of prospective yield to C . Given C , MEI varies directly with the expected returns and vice versa. Given the expected returns, MEI varies inversely with C with vice versa. MEI is very important in the ranking of the investment choices. Higher the MEI, higher will be the rank of the investment projects.

MEI schedule expresses the functional relationship between different rates of interest and corresponding amounts of investment, when MEC is given. If the rate of interest is high, investment is at low level. A low rate of interest leads to increase in investment. Thus, MEI schedule that relates investment to the rate of interest is also called investment demand schedule. As MEI schedule depicts an inverse relation between rate of interest and amount of investment, it slopes downwards from left to the right as shown below



In the figure, investment (I) or change in capital stock is measured in horizontal axis and the rate of interest is measured on vertical axis. MEI curve has a negative slope. It shows that a fall in the rate of interest from r_1 to r_2 and r_3 leads to a rise in investment from I_1 to I_2 and I_3 respectively. While MEC schedule represents the investment demand of individual firms in relation to the market rate of interest, MEI schedule represents the investment demand by all the firms. This makes the demand for capital in the economy as a whole. The MEI schedule is represented by the investment function $I = f(i)$.

Principle of Effective Demand

In the Keynesian theory of income and employment determination, principle of effective demand occupies a significant place. In the capitalist economy, the level of employment depends upon the level of aggregate effective demand. According to Keynes, effective demand is determined by aggregate supply and aggregate demand. Only that level of demand is effective where aggregate demand and supply are fully matched and entrepreneurs have no tendency either to expand or contract output and employment. We can now analyse the concepts of aggregate supply and aggregate demand and how their interaction determines the equilibrium level of income and employment.

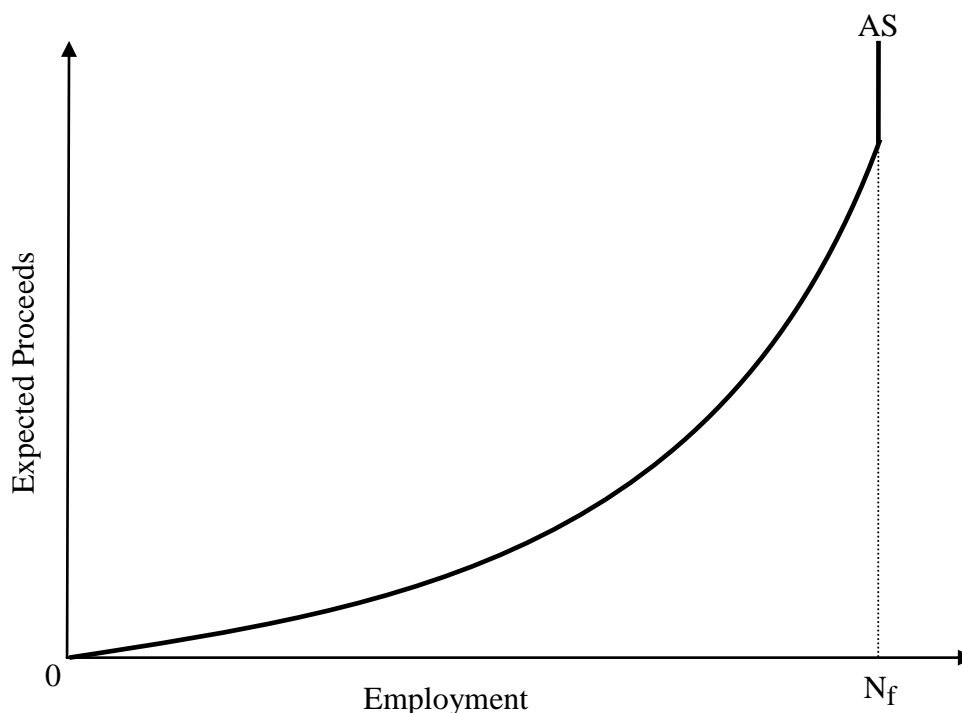
Aggregate Supply Function

In his General Theory, Keynes relates aggregate supply function to varying levels of employment. It is based on the assumption that labour is the only resource and the only cost which must be covered by the sale proceeds. At any level of employment of labour, aggregate supply price is the total amount of money which all the entrepreneurs in the economy taken together, must expect to receive from the sale of output produced by the given number of labours employed, if it is just worth employing them. Aggregate supply price, at given level of employment, according to Keynes, is the expectation of proceeds which will just make it worthwhile for the entrepreneurs to employ that number of workers. It is the minimum

proceeds which the entrepreneurs expect to recover from the sale of output. We can represent aggregate supply function as a schedule of various aggregate supply prices at different levels of employment. That is, each level of employment in the economy is related to a particular aggregate supply price and there are different aggregate supply prices for different levels of employment as shown in the following table.

Levels of employment (in lakhs of workers)	Aggregate Supply Price (in crores of Rs)
10	200
20	220
30	240
40	260
50	280
50	300

The above table represents varying levels of aggregate supply prices at different levels of employment. It reveals that the aggregate supply price rises with the increase in level of employment. If the entrepreneurs are to provide employment to 20 lakh workers, they must receive Rs 220 crores from the sale of output produced by them. If the level of employment is 40 lakh the aggregate supply price is 260 crores which is the minimum proceeds expected to receive to sustain such level of employment. But when the economy reaches the level of full employment (50 lakh) aggregate supply price continues to increase but there is no further increase in employment. According to Keynes, the aggregate supply function is an increasing function of the level of employment. But when the economy reaches full employment, aggregate supply function becomes perfectly inelastic. Aggregate supply function is linear. But if wage rate also increases long with the expansion in employment, the aggregate supply function follows a nonlinear path as shown below.



The curve of aggregate supply function starts from the point of origin and slopes upwards to the right because as the necessary expected proceeds increase, the level of employment also increases. But when the economy reaches full employment limit, as indicated by N_f , the aggregate supply curve becomes vertical. Even with the increase in aggregate supply price it is not possible to provide more employment as the economy has attained the level of full employment.

Aggregate Demand Function

The major analytical tool employed by Keynes in the determination of income and employment is aggregate demand function. According to Keynes, aggregate demand function means the amount of money or proceeds that all the entrepreneurs in the economy taken together expect to receive from the sale of output produced by the given number of workers employed. In other words, aggregate demand price, represents the amount of expenditure actually expected by the entrepreneurs when a given number of workers are employed to produce goods and services. The aggregate demand schedule does not represent any particular or actual level of demand; it is simply the possible level of demand for different categories of goods and services. Thus, aggregate demand is an *ex-ante* concept.

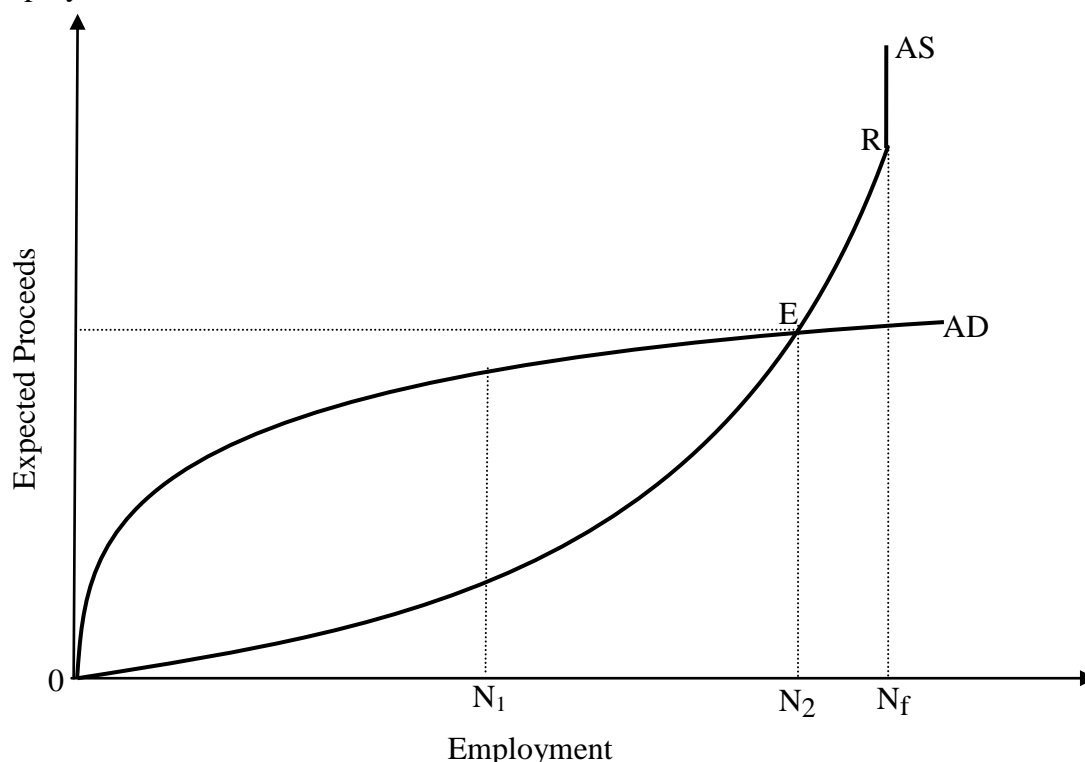
In a two sector economic model consisting of households and business sector, the level of aggregate demand is determined by aggregating the expected expenditures on the consumer goods and services and in the investment goods. Thus, aggregate demand is determined by the consumption demand and investment demand. The aggregate demand can be expressed as $D = C + I$. As said above, consumption demand depends on disposable income on the one hand, and propensity to consume on the other. According to Keynes, investment is determined by marginal efficiency of capital (MEC) and rate of interest. While rate of interest is more or less sticky, it is the changes in MEC that cause frequent changes in inducement to invest. According to Keynes, the aggregate demand function is an increasing function of the level of employment. Thus we can construct aggregate demand curve showing different aggregate demand prices at different levels of employment. Aggregate demand also rises from left to the right. This is because as the level of employment increases, aggregate demand price also rises, as shown below.



Effective Demand and Determination of Employment

As said above, aggregate supply curve shows the receipts which must be received by the entrepreneurs so as to provide employment to given number of laborers whereas aggregate demand curve shows proceeds which entrepreneurs actually expects to receive at different levels of employment. These aggregate demand and aggregate supply curves determine the level of employment in the economy. The equilibrium level of employment is determined at the point where demand price aggregate equals the aggregate supply price. In other words, it is the point where what the entrepreneurs 'expects to receive' equals what they 'must receive' and their profits are maximized. This point is called the effective demand. Effective demand is that aggregate demand price which becomes 'effective' because it is equal to aggregate supply price and thus represents short run equilibrium. So long as aggregate demand price is higher than aggregate supply price, the prospects of getting additional profits are greater when more workers are provided employment. The expected proceeds (revenue) rise more than proceeds necessary (cost). This process will continue till the aggregate demand price equals aggregate supply price and the point of effective demand is reached.

It is not necessary that the equilibrium level of employment is always at full employment. Equality between aggregate demand and aggregate supply does not necessarily indicate the full employment level. The economy can be in equilibrium at less than full employment or underemployment equilibrium can exist. The classical economists denied that there would be equilibrium at less than full employment because they believed that supply creates its own demand and therefore deficiency of aggregate demand would not be experienced. Keynes demolished the classical thesis of full employment and point out that deficiency of aggregate demand can cause underemployment equilibrium. The following figure illustrates the principle of effective demand and the determination of equilibrium level of employment.



AD is the aggregate demand function and AS is the aggregate supply function. Aggregate demand curve and aggregate supply curve intersects at point E. this is the effective demand where ON_2 workers are employed. At less than ON_2 level of employment, say at ON_1 , aggregate demand curve lies above aggregate supply curve showing that it is profitable to expand the amount of employment. However, it would not be profitable for the entrepreneurs to increase employment below ON_2 , as AD lies below AS and they incur losses. Thus, E, the point of effective demand determines actual level of employment in the economy.

It can be noticed that the equilibrium at E represents underemployment or less than full employment level. At equilibrium level of employment ON_2 , the N_2N_f persons remain unemployed. It is important to note that N_2N_f persons are involuntarily unemployed. They are willing to work at the existing wage rates but are unable to find jobs. This unemployment is due to deficiency of aggregate demand. It follows that, to raise the economy to the level of full employment, requires the raising the point of effective demand by increasing the aggregate demand. The unemployment will be removed and full employment will be reached if through increase in investment demand or increase in consumption demand or both, aggregate demand curve shifts upwards so that it intersects aggregate supply curve at point R. With the intersection of aggregate demand and aggregate supply at point R, equilibrium will be stabled at full employment level ON_f .

Keynesian Two Sector Model

As said above, Keynesian theory deals with short run and Keynesian theory of income determination can be explained by assuming only two sectors in the economy, namely households and business firms. It is a closed economy in which there are no exports and imports. Keynes focused on this simple two sector model for determination of income and derived conclusions regarding policy formulations from this basic model.

In the two sector model, only consumption and investment expenditure takes place. Thus total output of the economy is the sum of is the sum of consumption and investment expenditures. Because there is no government in this economy, national income equals net national product. Again, because there is no government, there can be no taxes and all personal income becomes disposable personal income. In this economy, disposable personal income also equals net national product. Disposable personal income must be devoted either to personal consumption expenditures or to personal savings. Because disposable personal income equals net national product, personal savings must then equal investment. Thus we have the following identities.

$$NNP (Y) \equiv C + I$$

$$\text{Disposable Personal income (Yd)} \equiv C + S$$

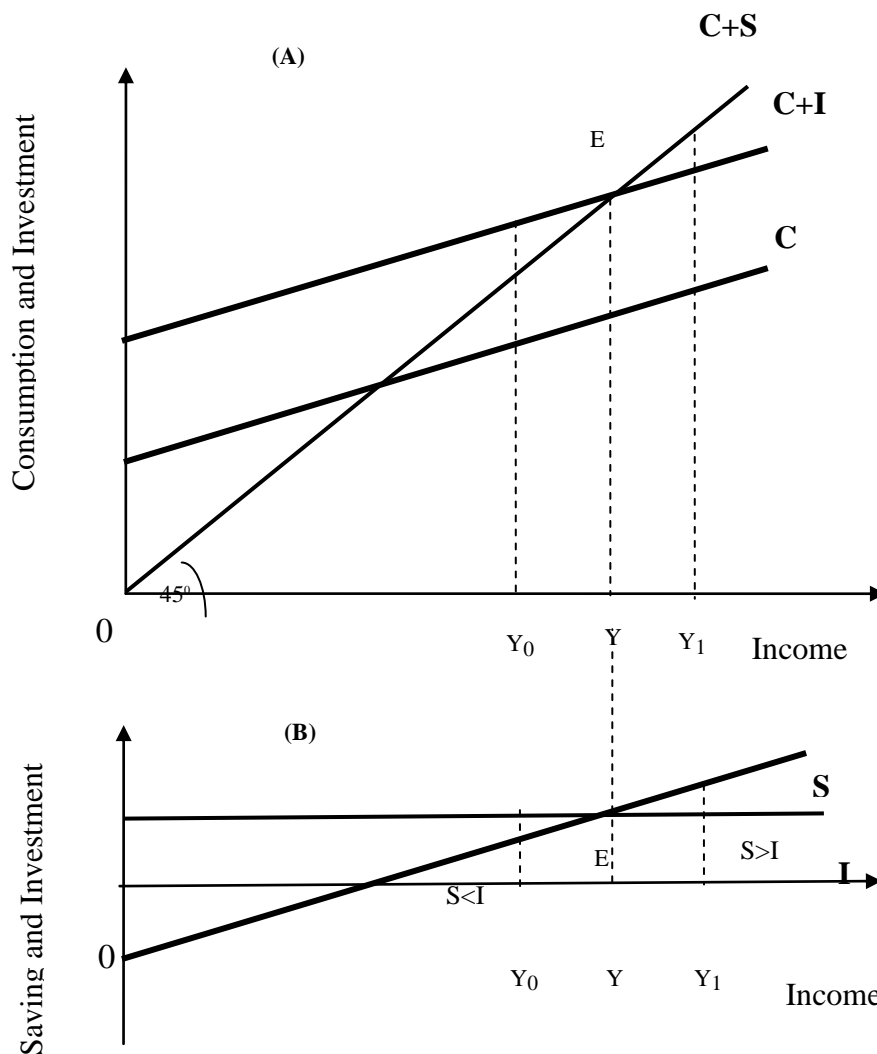
$$Y \equiv Yd$$

$$\text{Therefore } S \equiv I$$

These are fundamental accounting identities with which we will work in the two sector model

Equilibrium Income and Output

The equilibrium level of income and output is determined at the point where the aggregate demand function intersects aggregate supply function. In the two sector economy, aggregate demand consist of consumption demand and investment demand ($Y = C + I$). In drawing aggregate supply, not only stock of capital, size of population, state of technology, average and marginal product of labour and money wages are assumed to remain constant but also price level of output is held constant. This type of aggregate supply curve ($Y = C + S$) can be shown as 45° line starting from the point of origin. The following figure depicts the equilibrium level of income and output in the two sector model.



In the figure, aggregate demand function is represented by $C + I$ drawn by adding consumption function (C) and investment demand (I). The 45° line represents the aggregate supply function $Y = C + S$. The aggregate demand function and aggregate supply function intersect at point E and equilibrium level income OY is determined. Now income cannot be in equilibrium at levels smaller than OY , say at OY_0 . This is because at OY_0 , aggregate demand exceeds aggregate supply since $C+I$ curve lies above 45° line. This excess demand will lead to the decline in inventories which induce firms to expand their output of goods and services to meet the extra demand for them. Income will continue to increase till OY is reached. On the contrary, at levels of income greater than the equilibrium level, say at OY_1 , aggregate demand fall short of aggregate supply. This will cause unintended increase in inventories of goods with the firm. The firms will respond by cutting down production. This will lead to a fall in income until the level OY is reached where aggregate demand is equal to the aggregate supply.

The equilibrium may also be defined as that level of income at which planned saving equals planned investment. In part B of the figure, I is autonomous investment function and S is saving function. The saving and investment function intersects at point E_1 which determines the equilibrium level of income OY . At OY , planned saving is equal to planned investment. At OY_0 , planned investment by the entrepreneurs is more than planned savings by the people. This would mean that aggregate demand is greater than aggregate supply of output. This will lead to decline in inventories and firms will increase

production, raising the level of income and employment. On the other hand, at OY_1 , investment is less than savings. It means that aggregate demand is less than aggregate supply. As a result, the entrepreneurs will not be able to sell their entire output at given prices. The result will be that output will be reduced which will result in reduction in income.

Keynesian Three Sector Model

In the above analysis of two sector model, we explained how equilibrium level of income is determined by the consumption function and autonomous investment demand. We can construct a three sector model by adding government sector to the two sector simple economy model. Even though government influences the economy in a variety of ways, Keynesian three sector model confines to the effects of government's expenditure (G) and taxation (T).

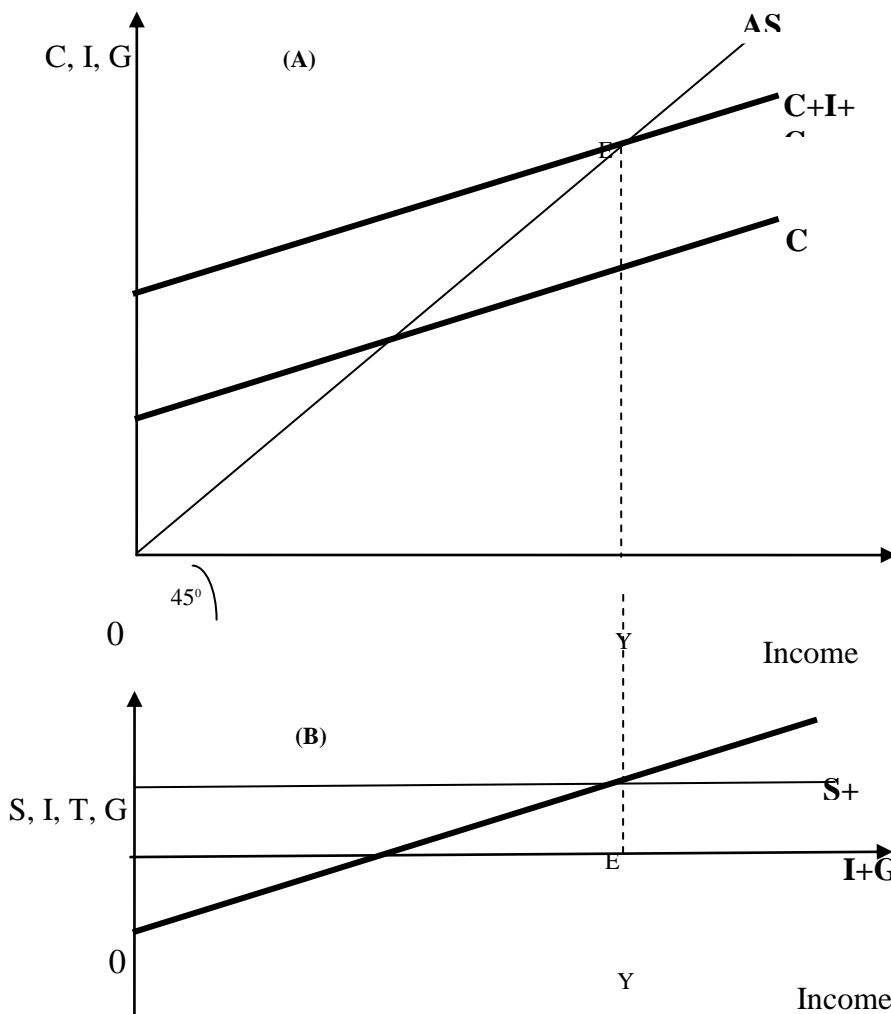
Thus, GNP identity for the three sector model, we have $AD = C+I+G$ and $AS = C+S+T$. the Keynesian condition for equilibrium in a three sector model may now be written as

$$C+S+T = C+I+G$$

Expressed in terms of saving and investment, equilibrium will be found at that level of income at which saving plus taxes equals planned investment plus government expenditure.

$$S+T = I+G$$

The determination of equilibrium level of income in a three sector model is graphically shown below.



C is the consumption function curve to which we have added the autonomous investment (I) and government expenditure (G) to get aggregate demand curve $C+I+G$. with this, equilibrium level of income is determined at OY at which aggregate demand curve intersects 45° line of aggregate supply. If the income is less than OY , aggregate demand exceeds aggregate supply. This implies unintended decline in inventories of goods which will induce firms to expand level aggregate output to the level of OY . On the contrary, at level of income greater than OY , aggregate demand is less than aggregate supply. This deficiency of demand for demand for goods will cause unintended accumulation of inventories. The firms would respond to this by cutting back production of goods which will lead to the reduction of income to the equilibrium level OY .

Suggested Readings:

1. K C Rana, K N Verma: Macro Economic Analysis. Vishal Publishing Co. Chapters 10, 11 and 17.
2. Eugene Diulio: Macroeconomics. Third edition. Shaum Outline, Tata Mcgraw-Hill
3. Gregory Mankew: Macro Economics. Fifth Edition. Worth Publishers
4. H L Ahuja: Macroeconomics – Theory and Policy: Advanced Analysis. S Chand and company. Chapters 4, 5 6 and 9.
5. D N Dwivedi: Macroeconomics – Theory and Policy: Third Edition. Tata Mcgraw-Hill. Chapters 6, 7 and 10.
6. Edward Shapiro: Macroeconomic Analysis: fifth edition. Galgotia Publications. Chapters 4, 5 and 6.
7. M L Jhingan : Macroeconomic Theory : eleventh Edition. Vrinda Publications. Chapters 7, 8, 10 and 15.

MODULE V

THE ELEMENTARY ISLM MODEL

Elementary IS LM Model (Two Sector only)-Definition & Derivation of IS and LM curves – General Equilibrium using IS & LM curves.

Introduction

The ISLM model (Investment Saving/Liquidity preference Money supply) is a macroeconomic tool that demonstrates the relationship between interest rates and real output in the goods and the money market. The intersection of the IS and LM curves is the "General Equilibrium" where there is simultaneous equilibrium in both markets. This model was originally developed by John R. Hicks in his article, "Mr. Keynes and the Classics – A Suggested Interpretation". Although disputed in some circles and accepted to be imperfect, the model is widely used and seen as useful in gaining an understanding of macroeconomic theory. It is used in most university macroeconomics textbooks. Thus, ISLM model is a macroeconomic model that graphically represents two intersecting curves, called the IS and LM curves. The investment/saving (IS) curve is a variation of the income-expenditure model incorporating market interest rates (demand for this model), while the liquidity preference/money supply equilibrium (LM) curve represents the amount of money available for investing (supply for this model). The model attempts to explain the investing decisions made by investors given the amount of money they have available and the interest rate they will receive. Equilibrium occurs when the amount of money invested equals the amount of money available for investing.

According to the Classical Theory, monetary policy has no effects on the level of real economic variables (such as output, consumption, savings, investment and the real interest rate). In the Classical Theory it is assumed that all prices and (nominal) wages are perfectly flexible both in the short-run and the long-run. Thus, an increase in the level of the money supply M will increase proportionally the price level P (and the level of the exchange rate S in an open economy) with no real effects. An increase in the rate of growth of the money supply will increase proportionally the rate of inflation, the nominal interest rate (and the rate of currency depreciation) and will have no real effect on Y , C , I , r . On the other hand, the basic idea of the Keynesian Theory (IS/LM model) is that prices (and nominal wages) are not flexible in the short-run: they do not clear markets in the short-run. In other terms, there is inertia in the setting of prices (especially when the economy is operating below full capacity /full employment). The rationale of assuming that prices are sticky is that firms and businesses do not change the prices of the goods they sell on a continuous basis. Thus, IS-LM model shows how the level of national income and rate of interest are jointly determined by the simultaneous equilibrium in the two interdependent goods and money markets. At present IS-LM model is a standard tool of macro economics and the effects of monetary and fiscal policies are discussed using this IS and LM curves model.

One Sector Neo classical Model (The Quantity Theory of Money)

The neoclassical approach is developed from the quantity theory of money. The one sector is the monetary sector (money market) with money and other financial assets. According to the quantity theory of money, changes in the money supply will have no effect on national output, level of employment and composition of the national output.

Assumptions of the model

1. It is assumed that there is a simple economy where money is the only financial asset and it is used for transactions.
2. Demand for money is a constant fraction of the value of transactions.

Demand for Money

The demand for money equation may be written as

$$M^D = kY = kyP \quad \text{--- (1)}$$

Where M^D = demand for nominal money

k = is a constant

Y = nominal national output

y = real national output ($Y/P = y$)

P = Price level

Supply of Money

Money is supplied by the central bank.

Equilibrium Condition (Money Market Equilibrium)

For equilibrium in the money market, the demand for money must be equal to the supply of money (stock of money).

$$\text{i.e. } M^D = M^S \quad \text{----- (2)}$$

where, M^S is the Money Supply (nominal).

Substituting (2) in (1) we get $M^S = kyP$

This means that if money supply is increased a new equilibrium can be achieved only if the demand for money increases to match the increased money supply. If real income and k are fixed, the only way to reach equilibrium is by a rise in the price level.

Thus, in the neoclassical one sector model 'y' and M^S are exogenous whereas P is endogenous.

Policy Implications

1. An increase in money supply will increase only the price level but the real variables are unaffected by money supply.
2. The price mechanism enables a decentralized economy to adjust itself.

One Sector Keynesian Model**The Simple Keynesian Model**

The simple Keynesian model includes only the goods market and it shows an equilibrium level of output where goods market and labour market do not clear and so capital stock and labour force are not fully employed.

Assumptions of the model

1. The Price level is fixed.
2. The stock of capital and the labour force are constant and determines the maximum level of real output.
3. Firms are profit maximisers and it is a short run model.

Model

The model solves for the equilibrium level of real output that has no tendency to change.

Equilibrium

Equilibrium requires that the supply of real national output equals the quantity of national output (demand for output). Here consumption and income are the endogenous variables.

$$\text{i.e. } y = E \quad \text{--- (1)}$$

where, y = real national output

E = Desired Aggregate Demand (Expenditure) and

$$E \equiv C + I \quad \text{----- (2)}$$

$$C = a + by \quad \text{----- (3)}$$

Where, b = MPC (marginal propensity to consume) and

$I = I_0$ (Autonomous Investment)

Diagram (Keynesian Cross Diagram)

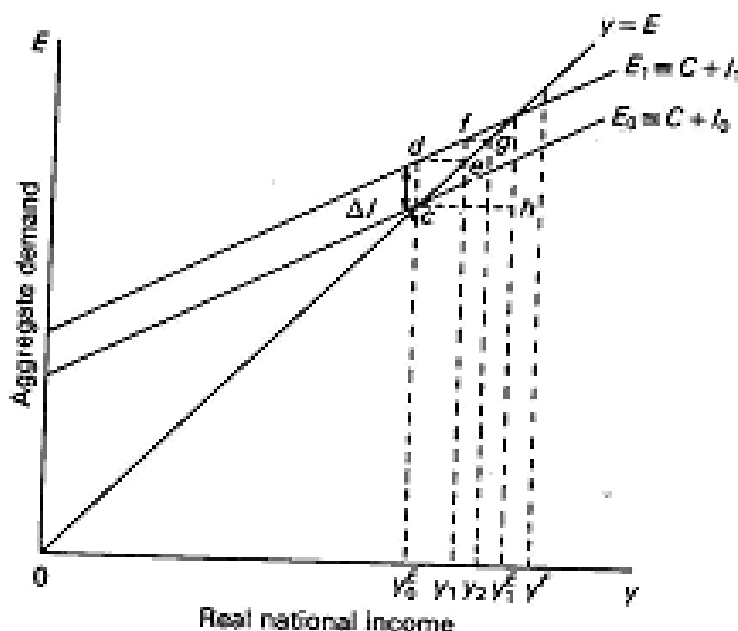


Figure 5.1 The Keynesian One Sector Model

The equilibrium condition is given by the 45° line along which $y = E$. Aggregate Demand, AD is given by the $E_0 \equiv C_0 + I_0$ schedule, the slope of which depends on the marginal propensity to consume. The two lines cross at equilibrium level of output, y_0^E . If level of aggregate demand increases from E_0 to E_1 , the equilibrium level of output will rise from y_0^E to y_1^E because output is perfectly elastic at current (fixed) prices.

Implications

1. If aggregate demand is greater than full employment level of output, output produced is limited to full employment level y_f .
2. If aggregate demand greater than full employment, the assumption of fixed prices is not correct.

The crucial feature of the Keynesian model is that it can solve for an equilibrium level of output at which the capital stock and labour force are not fully employed. The goods market does not clear because firms are willing to sellers output at current prices but cannot find customers.

DERIVATION OF IS LM CURVES IN A TWO SECTOR MODEL:

Introduction

The IS/LM model combines the goods and money market equilibrium's to form an aggregate model that describes a general equilibrium setting in the economy. The general equilibrium model of the economy consists of two parts. The first part brings together the determinants of equilibrium in the real sector or goods market of the economy. The second part brings together the determinants of equilibrium in the money market or monetary sector of the economy. The equilibrium in the real sector is defined in terms of the equality between the aggregate saving and aggregate investment. Corresponding to that aggregate real income, the aggregate demand for goods just equals the aggregate supply of goods in the economy ($C+I = Y$). The money market equilibrium requires equality between the total supply of money and the total demand which brings the equilibrium rate of interest. In short, general equilibrium requires simultaneous equilibrium in goods and money markets. The existence of equilibrium in one market does not necessarily mean that the entire system is in equilibrium. General equilibrium requires that the level of income and the rate of interest must bring equality between saving and investment and also the demand for money equals the supply of money.

Thus, the ISLM model integrates money, interest and income into a general equilibrium model of product and money markets by Hicks and Hansen. The term IS the shorthand expression of the equality of investment and saving which represents the product market equilibrium. On the other hand, the term LM is the shorthand expression of the equality of money demand (L) and money supply (M) and represents the money market equilibrium. For the analysis of general equilibrium or real and monetary sector, we should bring the product and money markets to the scene. In other words, we should study the derivation of the IS and LM functions and should understand their slope for analyzing the effectiveness of monetary and fiscal policies.

The Goods Market Equilibrium (Real Sector)

The real market or the goods market is in equilibrium when desired saving and investment are equal or the aggregate demand for goods just equals the aggregate supply. If the amount of saving exceeds investment or the aggregate supply is greater than the aggregate demand, the level of income in the economy will decline. On the other hand, if the volume of investment exceeds saving or the aggregate demand for goods is greater than their aggregate supply, the level of income tends to expand. We know that saving is a direct function of the level of income which can be represented as:

$$S = f(y) \quad (1)$$

We know that investment is a decreasing function of the interest rate which can be represented as:

$$I = f(r) \quad (2)$$

In other words, the investment function denotes an inverse relationship between the volume of investment and the rate of interest while the saving function expresses a direct relationship between the amount of saving and the level of income. The equilibrium condition postulates equality between saving and investment in the state of equilibrium.

From (1) and (2), we have $S = I$.

The IS schedule reflects the equilibrium of the goods market. It shows the combinations of interest rate and income levels where saving-investment equality takes place so that the goods market of the economy is in equilibrium. It is also known as "real sector" equilibrium.

Derivation of the IS Curve

Aggregate expenditure depends on real income and the real interest rate, as well as other autonomous influences (including the price level). The combination of real interest rates and real income levels that result in equilibrium in the goods market is called the IS curve. The IS curve graphically shows the relationship between the interest rate and aggregate output from the demand side of the model. The derivation of the IS curve can be taken from the dynamics of the aggregate demand function $Y = C + I$, where output (Y) is equal to consumption (C) and (I) represents Investment. For the IS curve, the independent variable is the interest rate and the dependent variable is the level of income (even though the interest rate is plotted vertically). The IS curve is drawn as downward-sloping with the interest rate (i) on the vertical axis and income Y, on the horizontal axis. The initials IS stand for "Investment and Saving equilibrium". Thus the IS curve is a locus of points of equilibrium in the "real" (non-financial) economy. Given expectations about returns on fixed investment, every level of the real interest rate (i) will generate a certain level of planned fixed investment and other interest-sensitive spending. Lower interest rates encourage higher fixed investment and the like. Income is at the equilibrium level for a given interest rate when the saving that consumers and other economic participants choose to do out of this income equals investment. The multiplier effect of an increase in fixed investment resulting from a lower interest rate raises real income. This explains the downward slope of the IS curve. In summary, this line represents the causation from falling interest rates to rising planned fixed investment to rising national income and output.

The derivation of the IS curve is shown in Figure 5.2. In Panel (A) of this figure, the saving curve S in relation to income is drawn in a fixed position on the Keynesian assumption that the rate of interest has little effect on saving. The saving curve shows that saving increases as income increases. In other words, saving is an increasing function of income. On the other hand, investment depends on the rate of interest and the level of income. Given a level of interest rate, the level of investment, rises with the level of income. At a 5 per cent rate of interest, the investment curve is I_2 . If the rate of interest is reduced to 4 per cent, the investment curve will shift upward to I_3 . The rate of investment will have to be raised to reduce the marginal efficiency of capital to equate with the lower rate of interest. Thus the investment curve I_3 shows more investment at every level of income. Similarly when the rate of interest is raised to 6 per cent, the investment curve will shift downward to I_1 . The reduction in the rate of investment is essential to raise the marginal efficiency of capital to equate with the higher interest rate. In Panel (B) we derive the IS curve by marking the level of income at various interest rates. Each point on this IS curve represents a level of income at which saving equals investment at various interest rates. The rate of interest is represented on the vertical axis and the level of income on the horizontal axis. If the rate of interest is 6 per cent, the S curve intersects the I_1 curve at E_1 which determines OY_1 income. From this income level, which equals Rs.100 crores we draw a dashed line downward to intersect the extended line from 6 per cent at point A. At interest rate 5 per cent, the S curve intersects the I_2 curve at E_2 so as to determine OY_2 income (Rs 200 crores). In the lower figure, the point B corresponds to 5 per cent interest rate and Rs 200 crores income level. Similarly, the point C corresponds to the equilibrium of S and I_3 at 4 per cent interest rate. By connecting these points A, B and c with a line, we get the IS curve. The IS curve slopes downward from left to right because as the interest rate falls, investment increases and so does income. In other words, there is a negative relationship between income and interest rate in the real sector of the economy.

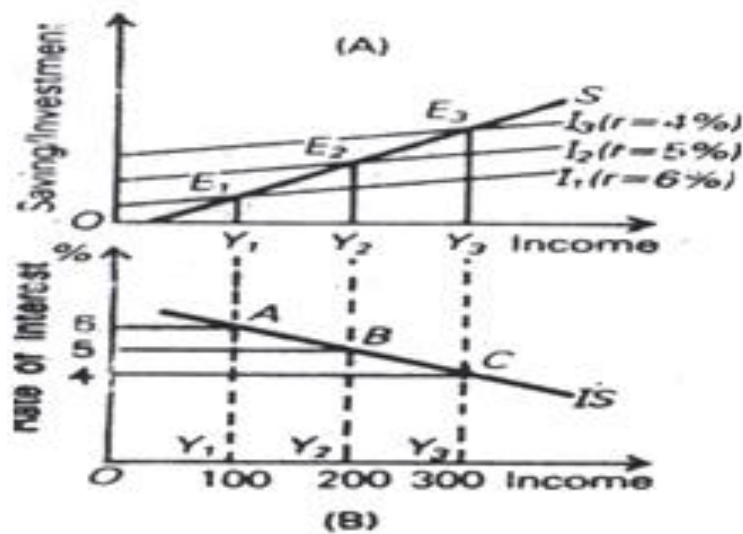


Figure 5.2 Derivation of IS Curve

The Slope of the IS Curve

Figure 5.2 shows that the IS curve slopes downward from left to right. This negative slope reflects the increase in investment and income as the rate of interest falls. The IS curve may be flat or steep depending on the sensitiveness of investment to changes in the rate of interest, and also on the size of the multiplier.

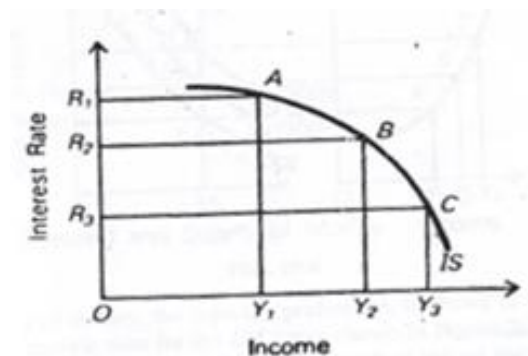


Figure 5.3 Slope of IS Curve

If investment is very sensitive to the rate of interest, the IS curve is very flat. This is shown by the segment AB of the IS curve in Figure 5.3 where a small fall in the rate of interest from R_1 to R_2 leads to a proportionately large rise in income from Y_1 to Y_2 . The IS curve is interest elastic in the AB segment of the IS curve.

On the other hand, if investment is not very sensitive to the rate of interest, the IS curve is relatively steep. In terms of Figure 5.3, when the rate of interest falls from R_2 to R_3 , income increases by a relatively smaller amount Y_2 to Y_3 . The BC segment of the IS curve is less interest elastic. Any further fall in the rate of interest from R_3 will lead to no change in income because the IS curve is vertical in that range. It is interest inelastic. The shape of the IS curve also depends upon the size of the multiplier. If the size of the multiplier is large, income is more sensitive to changes in the interest rate and the IS curve is flatter.

Shifts in the IS Curve

The IS function shifts to the right with a reduction in saving. Reduction in saving may be the result of one or more factors leading to increase in consumption. Consumers may like to buy a new product even by reducing saving. The community's wealth may increase due to government's policy and the wealth holders do not like to save the same amount than before. Consumers may start buying more in anticipation of shortages or price rise thereby reducing saving.

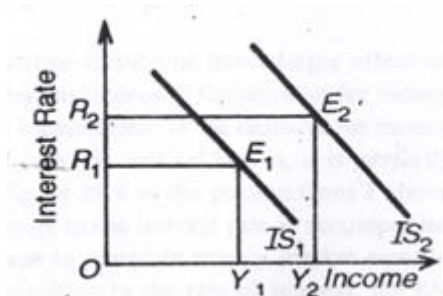


Figure 5.4 Shifts in the IS Curve

The IS function also shifts to the right by an autonomous increase investment. The increase in investment may result from expectations of higher profits in the future, or from innovation, or from expectations concerning increase in the future demand for the product, or from a rise of optimism in general. Moreover, government's expenditure and tax policies have the effect of shifting the IS function.

In all these cases, the IS function will shift to the right, equal to the decrease in the supply of saving times the multiplier or the increase in the investment times the multiplier. With the increase in the autonomous investment (or reduction in saving), the IS curve shifts from IS_1 to IS_2 and the new equilibrium is established at point E_2 which indicates a higher level of income Y_2 at a higher interest rate, as shown in Figure 5.4.

In the opposite case when investment falls or saving increases, the IS function will shift to the left and the equilibrium will be established at a lower level of income and interest rate. This situation can be explained by assuming IS_2 as the original curve.

THE MONEY MARKET EQUILIBRIUM,

Equilibrium in the money market implies equality between the demand and supply of money. That is $M_D = M_S$. If the demand for money is greater than its supply, the rate of interest has a tendency to increase under the pressure of increased selling of the bonds in the stock market for cash. On the contrary, an excess of supply of money over its demand will make the investors utilize their surplus cash for the purchase of bonds. This will push up the bond prices and will set a falling tendency in the rate of interest. Thus equilibrium in the financial sector requires that the demand for money equals the stock of money and the demand to hold bonds also equals the stock of bonds supplied.

Denoting M_D for money demand and M_S for money supply, in equilibrium $M_D = M_S$. The money supply function for this situation is plotted on the same graph as the liquidity preference function. The money supply is determined by the central bank decisions and willingness of commercial banks to loan money. Though the money supply is related indirectly to interest rates in the very short run, the money supply in effect is perfectly inelastic with respect to nominal interest rates (assuming the central bank chooses to control the money supply rather than focusing directly on the interest rate). Thus the money supply function is represented as a vertical line - money supply is a constant, independent of the interest rate, GDP, and other factors. Mathematically, the LM curve is defined by the equation $M/P = L(i, Y)$, where the supply of money is represented as the real amount M/P (as opposed to the nominal amount M), with P representing the price level, and L being the real demand for money, which is some function of the interest rate i and the level Y of real income. The LM curve shows the combinations of interest rates and levels of real income for which money supply equals money demand—that is, for which the money market is in equilibrium.

The demand for money $L = L_1 + L_3$ where L_1 is the transactions demand for money which is a direct function of the level of income, $L_1 = f(Y)$. L_3 is the speculative demand for money which is a decreasing function of the rate of interest, $L_3 = f(r)$. Thus in money market equilibrium, $M = L_1(Y) + L_3(r)$. For a given level of income, the intersection point between the liquidity preference and money supply functions implies a single point on the LM curve: specifically, the point giving the level of the interest rate which equilibrates the money market at the given level of income. Recalling that for the LM curve, the interest rate is plotted against real GDP (whereas the liquidity preference and money supply functions plot interest rates against the quantity of cash balances), an increase in GDP shifts the liquidity preference function rightward and hence raises the interest rate. Thus the LM function is positively sloped.

For the LM curve, the independent variable is income and the dependent variable is the interest rate. The LM curve shows the combinations of interest rates and levels of real income for which the money market is in equilibrium. It is an upward-sloping curve representing the role of finance and money. The initials LM stand for "Liquidity preference and Money supply equilibrium". As such, the LM function is the set of equilibrium points between the liquidity preference or Demand for Money function and the money supply function (as determined by banks and central banks).

Each point on the LM curve reflects a particular equilibrium situation in the money market equilibrium diagram, based on a particular level of income. In the money market equilibrium diagram, the liquidity preference function is simply the willingness to hold cash balances instead of securities. For this function, the nominal interest rate (on the vertical axis) is plotted against the quantity of cash balances (or liquidity), on the horizontal. The liquidity preference function is downward sloping. Two basic elements determine the quantity of cash balances demanded (liquidity preference) and therefore the position and slope of the function:

Deriving the LM Curve

The demand for real money balances depends on real income and the real interest rate. The real money supply depends on the nominal money supply and the price level. The combination of real interest rates and real income levels that result in equilibrium in the money market is called the LM curve. The LM curve shows all combinations of interest rate and levels of income at which the demand for and supply of money are equal. In other words, the LM schedule shows the combinations of interest rates and levels of income where the demand for money (L) and the supply of money (M) are equal such that the money market is in equilibrium. The LM curve is derived from the Keynesian formulation of liquidity preference schedules and the schedule of supply of money. A family of liquidity preference curves $L_1 Y_1$, $L_2 Y_2$ and $L_3 Y_3$ is drawn at income levels of Rs.100 crores, Rs.200 crores and Rs.300 crores respectively in Figure 5.5 (A). These curves together with the perfectly inelastic money supply curve MQ give us the LM curve. The LM curve consists of a series of points, each point representing an interest-income level at which the demand for money (L) equals the supply of money (M). If the income level is Y_1 (Rs.100 crores), the demand for money ($L_1 Y_1$) equals the money supply (QM) at interest rate R_1 . At the Y_2 (Rs.200 crores) income level, the $L_2 Y_2$ and the QM curves equal at R_2 interest rate. Similarly at the Y_3 (Rs.300 crores) income level, the $L_3 Y_3$ and QM curves equal at R_3 interest rate. The supply of money, the liquidity preference, the level of income and the rate of interest provide data for the LM curve shown in Figure 5.5 (B). Suppose the level of income is Y_1 (Rs.100 crores), as marked out on the income axis in

Figure 5.5 (B). The income of Rs.100 crores generates a demand for money represented by the liquidity preference curve $L_1 Y_1$. From the point E_1 where the $L_1 Y_1$ curve intersects the MQ curve, extend a dashed line horizontally to the right so as to meet the line drawn upward from Y_1 and K in Figure 5.5 (B). Points S and T can also be determined in similar manner. By connecting these points K , S and T , we get the LM curve. This curve relates different income levels to various interest rates.

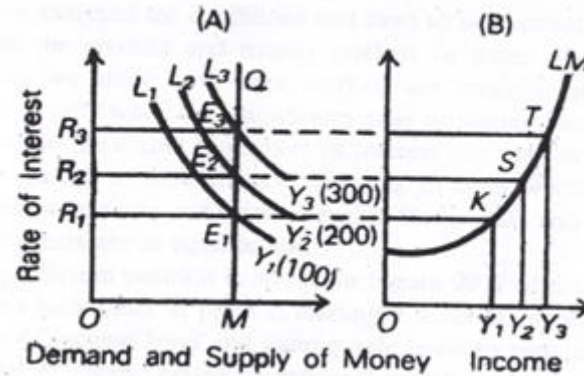


Figure 5.5 Derivation of LM Curve

The Slope of the LM Curve

The LM curve slopes upward from left to right because given the supply of money, and increase in the level of income increases the demand for money which leads to higher rate of interest. This, in turn, reduces the demand for money and thus keeps the demand for money equal to the supply of money. The smaller the responsiveness of the demand for money to income, and the larger the responsiveness of the demand for money to the rate of interest, the flatter will be the LM curve. This means that a given change in income has a smaller effect on the interest rate.

The LM curve is steeper, if a given change in income has a larger effect on the rate of interest. In this situation, the responsiveness of the demand for money to income is larger and is smaller for the interest rate. If the demand for money is insensitive to the interest rate, the LM curve is vertical that is, it is perfectly inelastic. This is shown in Panel (B) of Figure 5.3 as the portion from T above on the LM curve. In this case, a large change in the interest rate is accompanied by almost no change in the level of income to maintain money market equilibrium. If the demand for money is very sensitive to the rate of interest, the LM curve is horizontal. This is shown by the portion of LM curve which starts from the vertical axis in Panel (B) of Figure 5.3. The LM curve is perfectly elastic in relation to the rate of interest. In other words, a small change in the interest rate is accompanied by a large change in the level of income to maintain the money market equilibrium. This portion of the LM curve at the extreme left is equivalent to the Keynesian liquidity trap, already explained in the Keynes's theory of interest.

Shifts in the LM Curve

The LM function shifts to the right with the increase in the money supply given the demand for money, or due to the decrease in the demand for money, given the supply of money. If the central bank follows an expansionary monetary policy, it will buy securities in the open market. As a result, money supply with the public increases for both transactions and speculative purposes. This shifts the LM curve to the right.

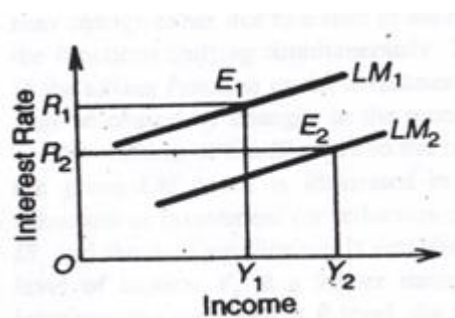


Figure 5.6

A decrease in the demand for money means a reduction in the quantity of balances demanded at each level of income and interest rate. Such a decrease in the demand for money balances creates an excess of the money supplied over the money demanded. This is equivalent to an increase in money supply in the economy which has the effect of shifting the LM curve to the right.

This is depicted in Figure 5.6. With the increase in the money supply the LM_1 curve shifts to the right as LM_2 which moves the economy to a new equilibrium point E_2 . The increase in the money supply brings down the interest rate to R_2 in the money market. This, in turn, increases investment thereby raising the level of income to Y_2 . Thus the effect of the increase in money supply is to shift the LM curve to the right and a new equilibrium is established at a lower interest rate, R_2 and higher income level, Y_2 .

Contrariwise, a decrease in the money supply or an increase in the demand for money will shift the LM function to the left such that a new equilibrium is established at a higher interest rate and lower income level. This case can be explained by assuming LM_2 as the original curve.

GENERAL EQUILIBRIUM USING IS AND LM CURVE

General Equilibrium of Goods and Money Market

So far we have analysed the conditions that have to be satisfied for the general equilibrium of the product and money markets in terms of the IS and LM functions. The IS/LM model tool that demonstrates the relationship between interest rates and real output in the goods and services market and the money market. The intersection of the IS and LM curves is the "General Equilibrium" where there is simultaneous equilibrium in both markets. Now we study how these markets are brought into simultaneous equilibrium. Equilibrium income and the real interest rate are determined by simultaneous equilibrium in the goods market and the money market. It is only when the equilibrium pairs of interest rate and income of the IS curve equal the equilibrium pairs of interest rate and income of the LM curve that the general equilibrium is established. In other words, when there is a single pair of interest rate and income level in the product and money markets that the two markets are in equilibrium.

Such an equilibrium position is shown in Figure 5.7 where the IS and LM curves intersect each other at point E relating Y level of income to R interest rate. This pair of income level and interest rate leads to simultaneous equilibrium in the real or goods (saving investment) market and the money (demand and supply of money) market. This general equilibrium position persists at a point of time, given the price level. If there is any deviation from this equilibrium position, certain forces will act and react in such a manner that the equilibrium will be restored.

Consider point *A* on the *LM* curve where the money market is in equilibrium at Y_1 income level and R_2 interest rate. But the product market is not in equilibrium. In the product market, the interest rate R_2 is lower. The product market can be in equilibrium at Y_1 income level only at a higher interest rate R_1 corresponding to point *B* on the *IS* curve. Consequently at point *A*, there is excess of investment over saving since point *A* lies to the left of the *IS* curve. The excess of *I* over *S* indicates excess demand for goods which raises the level of income. As the level of income rises, the need for transactions purposes increases. In order to have more money for transactions purposes, people sell bonds. This tends to raise the interest rate. This moves the *LM*-equilibrium from point *A* upward to point *E* where a combination of higher interest rate R and higher income level Y exists. On the other hand, rising interest rate reduces investment and an increasing income raises saving. This helps to bring about the equality of *I* and *S* at point *E* where the general equilibrium is re-established by the equality of *IS* and *LM*.

The model can be presented as a graph of two intersecting lines in the first quadrant. The horizontal axis represents national income or real gross domestic product and is labeled Y . The vertical axis represents the real interest rate, i . Since this is a non-dynamic model, there is a fixed relationship between the nominal interest rate and the real interest rate (the former equals the latter plus the expected inflation rate which is exogenous in the short run); therefore variables such as money demand which actually depend on the nominal interest rate can equivalently be expressed as depending on the real interest rate. The point where these schedules intersect represents a short-run equilibrium in the real and monetary sectors (though not necessarily in other sectors, such as labor markets): both the product market and the money market are in equilibrium. This equilibrium yields a unique combination of the interest rate and real GDP. Equilibrium income and the real interest rate are determined by simultaneous equilibrium in the goods market and the money market. Change in autonomous forces and the price level will lead to a shift in the *IS* or *LM* curve leading to a change in equilibrium income

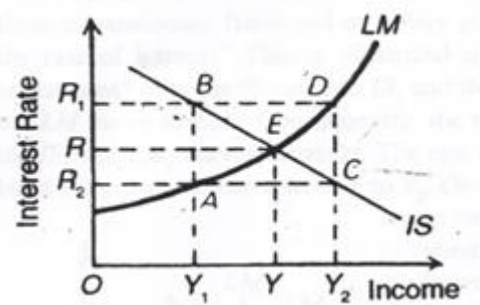


Figure 5.7

Now consider point *C* on the *IS* curve in Figure 5.7 where the product market is in equilibrium at R_2 interest rate and Y_2 income level. The money market is not in equilibrium. It can be in equilibrium at Y_2 income level only at a higher interest rate R_1 corresponding to point *D* on the *LM* curve. At point *C*, the demand for money (*L*) is greater than the supply of money (*M*) because point *C* reflects lower rate of interest R_2 than is required for the equality of *L* and *M*. Thus there is excess demand for money at R_2 interest rate, the excess demand for money leads people to sell bonds but there is less demand for bonds which tends to raise the interest rate. When the rate of interest begins to raise the product market is thrown into disequilibrium because investment falls. Falling investment leads to falling income which in turn reduces saving. This process ultimately brings the equilibrium of the product market when $I = S$ at point *E*. On the other hand, falling income reduces the transactions demand for money and ultimately brings about the equality of *LM* at point *E* where the equilibrium is re-established by the equality *IS* and *LM* curves, at R interest rate and Y income level.

CHANGES IN GENERAL EQUILIBRIUM

The general equilibrium of the product and money markets discussed above is based on the static equilibrium analysis. It started from a point of disequilibrium and again reached the equilibrium point of the equality of IS and LM functions. But the general equilibrium combination of Y income level and R rate of interest may change either due to a shift in the IS function or the LM function, or by both the functions shifting simultaneously. The IS function may shift due to changes in the saving function or the investment function. The shifts in the LM function may be caused by changes in the money supply or liquidity preference.

The shifting of the IS curve to the right and the consequent equilibrium with the given LM curve is illustrated in Figure 5.8. With the increase in the autonomous investment (or reduction in saving), the IS curve moves from IS to IS_1 and the new equilibrium is established at point E_1 which indicates a higher level of income Y_1 at a higher interest rate R_1 . If the interest rate had not increased but remained at R level, the increase in investment would have raised income from Y to Y_2 level. But this much increase in income would not take place. This is because with the increase in income, the demand for money for transactions purposes will raise the interest rate to R_1 level where the IS and LM functions intersect at point E_1 . Thus the expansionary effect of increase in investment is dampened by the rise in the interest rate and the income rises by less than the full multiplier.

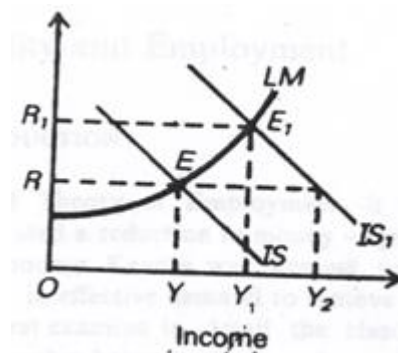


Figure 5.8

In the opposite case when investment falls or saving increases, the IS function will shift to the left and the equilibrium will be established at a lower level of income and interest rate. This situation has not been depicted in figure 5.8.

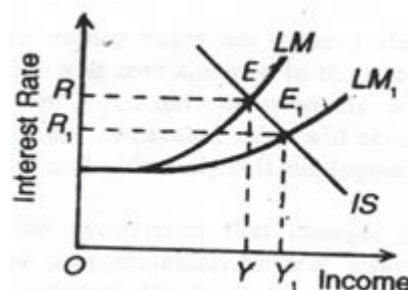


Figure 5.9

With the increase in the money supply the LM curve shifts to the right as LM_1 which moves the economy to a new equilibrium point E_1 where the IS curve intersects the LM_1 curve. The increase in the money supply brings down the interest rate R_1 in the money market. This, in turn, increases investment thereby raising the level of income to Y_1 . Thus the effect of the increase in money supply is to shift the

LM function to the right and a new equilibrium is established at a lower interest rate and higher income level. But how much income will rise as a result of an increase in the money supply depends on (1) how much the interest rate falls which in turn depends on the elasticity of speculative demand for money, and (2) how much investment rises as a result of any given fall in the interest rate which in turn depends on the interest – elasticity of investment demand function. Contrariwise, a decrease in the money supply or an increase in the demand for money will shift the *LM* function to the left such that a new equilibrium is established at a higher interest rate and lower income level. This case has not been depicted in Figure 5.9.

Simultaneous Shifts in the IS and LM Functions

We have seen above that with the increase in investment when the *IS* curve shifts to the right, both the rate of interest and the level of the income tend to rise, given the *LM* curve. On the other hand, when an increase in money supply shifts the *LM* curve to the right, it lowers the rate of interest and raises the income level, given the *IS* curve.

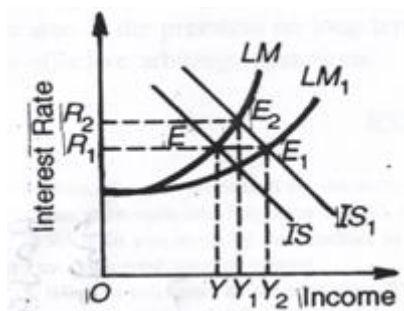


Figure 5.10

Now suppose both the *IS* and *LM* curves shift to the right simultaneously as a result of the increase in investment and money supply respectively. How will these expansionary fiscal and monetary policies affect the level of income and the rate of interest? This is illustrated in figure 5.10 where the increase in investment shifts the *IS* curve to *IS*₁ and the increase in the money supply shifts the *LM* curve to *LM*₁. Consequently, the new equilibrium position is *E*₁ where the *IS*₁ and *LM*₁ curves intersect. The rate of interest remains at the old level *R*₁, but the income increases from *Y* to *Y*₂. Given the money supply with no change in the *LM* curve, an increase in investment would raise both income and the rate of interest. This is shown in Figure 5.10 when the *IS*₁ curve intersects the *LM* curve at *E*₂ and the interest rate rises to *R*₂ and income to *Y*₁. But the rise in income is slowed down because of the rise in the interest rate. If the money supply increases by so much as to prevent the rise in the interest rate, the increase in income will be equal to the full expansionary effect of the rise in investment. This is depicted in Figure 5.10 by the shifting of the *LM* curve to the right as *LM*₁ which intersects the *IS*₁ curve at *E*₁. The income increases to *Y*₂ but the rate of interest remains at the same level *R*₁. So there has been full income expansionary effect of the increase in investment as a result of the simultaneous increase in money supply by just the amount necessary to prevent the rise in the interest rate.

Table 5.1 Summarises the causes and directions of shifts in the *IS* and *LM* curvesTable 5.1 Causes and Directions of Shifts in *IS* and *LM* curves

Causes	Curve	Direction
Increase in investment or consumption	<i>IS</i>	Right
Decrease in investment or increase in savings	<i>IS</i>	Left
Increase in money supply or decrease in money demand	<i>LM</i>	Left
Decrease in money supply or increase in money demand	<i>LM</i>	Right

Weaknesses or Limitations of ISLM Model

The popularity of ISLM model undoubtedly lies in its ability to present macroeconomics in terms of a model with exactly the same structure and mechanics as the model of supply and demand. Though the ISLM model is a fundamental model of macroeconomics, seldom do macroeconomists try to estimate the parameters of the model and use it to predict the future course of GDP. The fact that economists have not used the ISLM model in their attempts to numerically predict the effects of policy suggests that ISLM has weaknesses. Following are the major weaknesses of ISLM model.

1. The model is comparative static. Throughout it has been used to compare short run equilibrium positions and no attempt has been made to explain how the system moves from one equilibrium position to another.
2. The model assumes the absence of international trade. This assumption restricts its usefulness for the study of policy problems.
3. The model treats the price level as an exogenously given variable.
4. This model does not provide a detailed explanation of the working of the monetary system.
5. This model also ignores the time lags involved in the variables and the expectations about future.
6. The ISLM model fails to consider the labour market.
7. The ISLM predicts the equilibrium can be at any level because it assumes, as does the simple income-expenditure model, a passive supply. Sellers produce whatever is demanded, and all adjustment to changes in demand are in the form of changes in output and none of the adjustment is in the form of changes in prices. Adjustment cannot be in the form of price changes because the price level does not enter the model. Since changes in prices are the primary way markets adjust in microeconomic theory, the failure of ISLM to say anything about prices is a serious weakness.
8. If meant as a short-run model, the model is severely limited because it does not incorporate the rate of inflation. Inflation creates a difference between real and nominal interest rates. The nominal rate is the visible rate that people pay and receive, and the real interest rate is what is happening in terms of purchasing power.
9. The distinction between real and nominal interest rates is important in ISLM because investment spending should respond to the real interest rate and money demand to the nominal interest rate. Investment will remain constant if the real interest rate does not change; change in nominal rates will not change investment if it does not change the real rate.

10. To keep the demand for money constant, the nominal interest rate must remain constant. When people hold cash balances for transactions; they are concerned with purchasing power. If all prices double, the amount of money people want to hold will double, but the amount of purchasing power they want will remain constant.
11. The interest rate is a cost of holding purchasing power. If the rate of inflation increases, and the rate of interest with it, holding money becomes more expensive and people will want to hold smaller amounts of purchasing power. Thinking of the demand for money in terms of purchasing power lets us ignore price level and is the key to seeing the effects of the rate of interest. It is the nominal rate, not the real rate that matters.

Given these serious weaknesses, a major reason behind the use of ISLM as a framework for so much macroeconomic thinking is that no other simple model gives as much insight. ISLM suggests that economic disturbances can arise in either the money market or the goods market, a conclusion that predates ISLM. Economists want a simple model that concludes this. Also, ISLM can be expanded and made more complex in an effort to overcome its limitations.

EFFECTIVENESS OF MONETARY AND FISCAL POLICIES IN IS-LM MODEL - MONETARY AND FISCAL POLICY

Monetary policy

Monetary policy is the exercise of the central bank's control over the money supply as an instrument to achieve the objectives of general economic policy. In other words, monetary policy is the process by which the monetary authority of a country controls the supply of money, often targeting a rate of interest for the purpose of promoting economic growth and stability. The official goals usually include relatively stable prices and low unemployment. Monetary theory provides insight into how to craft optimal monetary policy. It is referred to as either being expansionary or contractionary, where an expansionary policy increases the total supply of money in the economy more rapidly than usual, and contractionary policy expands the money supply more slowly than usual or even shrinks it. Expansionary policy is traditionally used to try to combat unemployment in a recession by lowering interest rates in the hope that easy credit will entice businesses into expanding. Contractionary policy is intended to slow inflation in hopes of avoiding the resulting distortions and deterioration of asset values. Monetary policy differs from fiscal policy, which refers to taxation, government spending, and associated borrowing. Monetary policy rests on the relationship between the rates of interest in an economy, that is, the price at which money can be borrowed, and the total supply of money.

Monetary policy uses a variety of tools to control one or both of these, to influence outcomes like economic growth, inflation, exchange rates with other currencies and unemployment. Where currency is under a monopoly of issuance, or where there is a regulated system of issuing currency through banks which are tied to a central bank, the monetary authority has the ability to alter the money supply and thus influence the interest rate (to achieve policy goals). The beginning of monetary policy as such comes from the late 19th century, where it was used to maintain the gold standard. A policy is referred to as contractionary if it reduces the size of the money supply or increases it only slowly, or if it raises the interest rate. An expansionary policy increases the size of the money supply more rapidly, or decreases

the interest rate. Furthermore, monetary policies are described as follows: accommodative, if the interest rate set by the central monetary authority is intended to create economic growth; neutral, if it is intended neither to create growth nor combat inflation; or tight if intended to reduce inflation.

There are several monetary policy tools available to achieve these ends: increasing interest rates by fiat; reducing the monetary base; and increasing reserve requirements. All have the effect of contracting the money supply; and, if reversed, expand the money supply. Since the 1970s, monetary policy has generally been formed separately from fiscal policy. Even prior to the 1970s, the Bretton Woods system still ensured that most nations would form the two policies separately.

Fiscal Policy

In economics, fiscal policy is the use of government expenditure and revenue collection (taxation) to influence the economy. The two main instruments of fiscal policy are government expenditure and taxation. Changes in the level and composition of taxation and government spending can impact Aggregate demand, the distribution of income, the pattern of resource allocation and the level of economic activity in the economy. Thus, Fiscal policy refers to the use of the government budget to influence the first of these: economic activity. Governments use fiscal policy to influence the level of aggregate demand in the economy, in an effort to achieve economic objectives of price stability, full employment, and economic growth. Keynesian economics suggests that increasing government spending and decreasing tax rates are the best ways to stimulate aggregate demand. This can be used in times of recession or low economic activity as an essential tool for building the framework for strong economic growth and working towards full employment. Governments can use a budget surplus to do two things: to slow the pace of strong economic growth, and to stabilize prices when inflation is too high. Keynesian theory posits that removing spending from the economy will reduce levels of aggregate demand and contract the economy, thus stabilizing prices.

Economists debate the effectiveness of fiscal stimulus. The argument mostly centers on crowding out, a phenomenon where government borrowing leads to higher interest rates that offset the stimulative impact of spending. When the government runs a budget deficit, funds will need to come from public borrowing (the issue of government bonds). When governments fund a deficit with the issuing of government bonds, interest rates can increase across the market, because government borrowing creates higher demand for credit in the financial markets. This causes a lower aggregate demand for goods and services, contrary to the objective of a fiscal stimulus. Neoclassical economists generally emphasize crowding out while Keynesians argue that fiscal policy can still be effective especially in a liquidity trap where, they argue, crowding out is minimal. Some classical and neoclassical economists argue that crowding out completely negates any fiscal stimulus; this is known as the Treasury View, which Keynesian economics rejects. In the classical view, the expansionary fiscal policy also decreases net exports, which has a mitigating effect on national output and income. When government borrowing increases interest rates it attracts foreign capital from foreign investors. This is because, all other things being equal, the bonds issued from a country executing expansionary fiscal policy now offer a higher rate of return. Fiscal policy is the exercise of the government's control over public spending and tax collections for the general economic policy.

Now we will use ISLM model for examining the effectiveness of macro economic policies. The IS-LM model, as a vehicle for policy analysis, has a substantial influence on the policy makers and academicians. Like the developed countries, the IS-LM framework remains important for students to learn in the developing countries because of the benefits it offers in clarifying their thinking about the implications for practical policy issues. Monetary policy implies the variations in the supply of money brought about by the central bank of a country with a view to achieve certain economic goals. The fiscal policy, on the other hand, means the use of government spending and taxes as the instruments for the achievement of those very goals. In the present discussion, we shall however, restrict ourselves only to one dominant goal of economic policy, viz. raising the level of real income. The relative effectiveness of the monetary and fiscal policies in raising the level of real income and influencing the rate of interest can be assessed through the *IS-LM* general equilibrium framework.

We have already discussed that the LM function, given a fixed supply of money, slopes upwards from left to right. But the entire LM function can be divided into three distinct ranges – the Keynesian range, the classical range and the intermediate range.

At one extreme, the LM function is perfectly elastic at the minimum possible rate of interest. The speculative demand for money is perfectly elastic at this rate of interest. The asset holders are ready to exchange securities for cash at the existing security price even up to an unlimited extent. This is what we call the liquidity trap. This range may be denoted as the Keynesian range, since in Keynes' General Theory, this particular situation was greatly emphasized and it is within this range that the monetary policy becomes completely ineffective.

On the other extreme, at some very high rate of interest, the demand for money for idle balances becomes zero. The bond-holders do not anticipate any fall in the asset prices and they prefer to hold only securities and no idle cash. In this section, the LM function is perfectly inelastic and this range of LM function is known as the classical range. In between these two extremes of the pure classical and pure Keynesian ranges, there is an intermediate range of LM function with varying degrees of elasticity. This intermediate range is a blend of the pure classical and pure Keynesian ranges.

The relative effectiveness of monetary and fiscal policies over these ranges can be analysed with the help of Fig. 5.11.

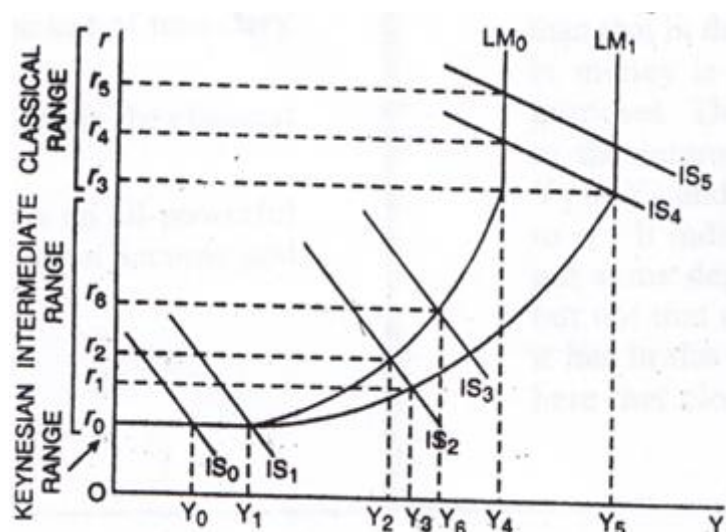


Figure 5.11

The Keynesian Range: The system in this range is initially in equilibrium at Y_0 income and r_0 rate of interest as shown in fig. 5.11. This equilibrium is determined at a low level of income and at the minimum possible rate of interest. Since the LM function here is perfectly interest-elastic, this denotes the state of liquidity trap. As the monetary authority buys securities, these are exchanged by the security holders for cash at the existing prices of securities. Therefore, by whatever amount the supply of money is increased, the rate of interest does not fall below r_0 rate of interest. An important policy implication is that the monetary policy becomes completely ineffective here either in raising the level of income or in lowering the rate of interest so that the aggregate demand function cannot be raised through monetary variations. The belief that the economic system was in a state of liquidity trap during the early 1930's led Keynes to suggest unorthodox fiscal prescriptions. If the level of income and rate of interest remain firmly anchored at a low point, the only way out is to raise the aggregate demand or IS function through fiscal measures like public spending; tax reduction and public works. As these measures shift the IS function from IS_0 to IS_1 , the level of income increases from Y_0 to Y_1 , although the rate of interest continues to remain pegged at the minimum level.

The Classical Range:- A situation quite the opposite of the one just explained above prevails, if the IS curve intersects the LM curve at a point where the latter is perfectly inelastic. In Fig. 5.11., IS_4 intersects LM_0 at its inelastic part so that equilibrium income is Y_4 and rate of interest r_4 . If there is an increase in the supply of money through open market purchase of securities by the central bank, the security holders can be induced to dispose of the securities in exchange of cash only at higher security prices or at a lower rate of interest. As the supply of money is raised, LM function shifts from LM_0 to LM_1 and IS_4 intersects LM_1 at its inelastic part so that the equilibrium is determined at a higher level of income and the rate of interest is pushed down to r_3 . Since the asset-holders are not inclined to hold any amount of cash balances, the entire amount of money is to be used up for transactions. It follows that in the classical range, the simple quantity theory of money holds valid and Y rises in proportion to the quantity of money.

In this range, it is thus obvious that the monetary policy is greatly effective. An increase in the money supply is capable of raising the equilibrium level of income. It can also bring down the rate of interest. In sharp contrast to the Keynesian range, the fiscal policy in the classical range is completely ineffective as well as unnecessary. Given LM_0 curve and with an increase in the IS function from IS_4 to IS_5 as a result of fiscal measures, the equilibrium income remains fixed at Y_4 but the rate of interest increases up to r_5 which may choke off the private spending by an amount equivalent to an increase in public spending to leave the aggregate demand unchanged. Thus fiscal policy becomes completely unnecessary in this range. It is also ineffective because an increase in income and output without the use of monetary policy cannot be possible.

The Intermediate Range: In between the two extremes of pure Keynesian and pure Classical ranges, there is an intermediate range showing varying levels of income and rates of interest. IS_2 curve intersects LM_0 , as shown in Fig. 5.11, in this range to determine Y_2 income and r_2 rate of interest. An increase in the supply of money shifts the LM curve from LM_0 to LM_1 . In the Keynesian range, this increase in M causes no change in Y and r . In the classical range, the increase in M brings about an increase in Y and a fall in the rate of interest. In the intermediate range, an increase in M is partly absorbed in transactions balances and partly in the speculative balances. The level of income does rise in this range but by an amount less than that in the classical range where the increase in money is utilized fully for the transactions purposes. The shift of LM from LM_0 to LM_1 in the intermediate range raises income from Y_2 to Y_3 and lowers the rate of interest from r_2 to r_1 . It indicates that the monetary policy has got some degree of effectiveness in this range but not that overwhelming effectiveness which it has in the classical

range. We may conclude here that closer the equilibrium intersection to the classical range, relatively greater is the degree of effectiveness of the monetary policy and closer the intersection to the pure Keynesian range, relatively less effective does it become.

The fiscal policy too has some degree of effectiveness in this range. If the fiscal measures like increased public spending induce a shift in the IS function from IS_2 to IS_3 , assuming a fixed supply of money, described by LM_0 , the level of income as well as the rate of interest may choke off a part of the private spending so that the increase in income is not as large as it was otherwise possible. A shift in LM function from LM_0 to LM_1 facilitates equilibrium at a rate of interest lower than r_2 and the level of income is also higher than the level induced by the fiscal measures only. A like the monetary policy, the degree of effectiveness of fiscal policy also varies over the different parts of the intermediate range. Closer is the intersection between IS and LM to the Keynesian range, relatively greater is the degree of effectiveness of the fiscal policy and closer is the equilibrium to the classical range, relatively lesser is the degree of its effectiveness.

In the intermediate range, both monetary and fiscal policies have some degree of effectiveness but their relative effectiveness depends to a great extent upon the elasticity of the IS function. If in this range, IS function is more elastic, as described by IS_2 in Fig. 5.11, the increase in money supply will raise the level of income more than it lowers the rate of interest. But Keynes has maintained that IS function is relatively less interest-elastic because both S and I functions are relatively less interest-elastic. Given a less elastic IS_2 curve, a monetary expansion primarily lowers the rate of interest. Its effect on the level of income is very little. Thus if the IS curve is inelastic, greater reliance has to be placed in this range upon the fiscal measures in order to raise the level of income.

Although, both monetary and fiscal policies have varying degrees of effectiveness in the intermediate range, the relative effectiveness in the intermediate range depends in large part on the elasticity of the IS function. If the IS function is the inelastic, monetary policy can do very little to raise the level of income, even in the intermediate range. Fiscal policy alone is effective in such a situation.

Contractionary, where an expansionary policy increases the total supply of money in the economy more rapidly than usual, and contractionary policy expands the money supply more slowly than usual or even shrinks it. Expansionary policy is traditionally used to try to combat unemployment in a recession by lowering interest rates in the hope that easy credit will entice businesses into expanding. Contractionary policy is intended to slow inflation in hopes of avoiding the resulting distortions and deterioration of asset values. Monetary policy differs from fiscal policy, which refers to taxation, government spending, and associated borrowing. Monetary policy rests on the relationship between the rates of interest in an economy, that is, the price at which money can be borrowed, and the total supply of money.

Monetary policy uses a variety of tools to control one or both of these, to influence outcomes like economic growth, inflation, exchange rates with other currencies and unemployment. Where currency is under a monopoly of issuance, or where there is a regulated system of issuing currency through banks which are tied to a central bank, the monetary authority has the ability to alter the money supply and thus influence the interest rate (to achieve policy goals). The beginning of monetary policy as such comes from the late 19th century, where it was used to maintain the gold standard. A policy is referred to as contractionary, if it reduces the size of the money supply or increases it only slowly, or if it raises the interest rate. An expansionary policy increases the size of the money supply more rapidly, or decreases the interest rate. Furthermore, monetary policies are described as follows: accommodative, if the interest rate set by the central monetary authority is intended to create economic growth; neutral, if it is intended neither to create growth nor combat inflation; or tight if intended to reduce inflation.

There are several monetary policy tools available to achieve these ends: increasing interest rates by fiat; reducing the monetary base; and increasing reserve requirements. All have the effect of contracting the money supply; and, if reversed, expand the money supply. Since the 1970s, monetary policy has generally been formed separately from fiscal policy. Even prior to the 1970s, the Bretton Woods system still ensured that most nations would form the two policies separately.

Fiscal Policy

In economics, fiscal policy is the use of government expenditure and revenue collection (taxation) to influence the economy. The two main instruments of fiscal policy are government expenditure and taxation. Changes in the level and composition of taxation and government spending can impact Aggregate demand, the distribution of income, the pattern of resource allocation and the level of economic activity in the economy. Thus, Fiscal policy refers to the use of the government budget to influence the first of these: economic activity. Governments use fiscal policy to influence the level of aggregate demand in the economy, in an effort to achieve economic objectives of price stability, full employment, and economic growth. Keynesian economics suggests that increasing government spending and decreasing tax rates are the best ways to stimulate aggregate demand. This can be used in times of recession or low economic activity as an essential tool for building the framework for strong economic growth and working towards full employment. Governments can use a budget surplus to do two things: to slow the pace of strong economic growth, and to stabilize prices when inflation is too high. Keynesian theory posits that removing spending from the economy will reduce levels of aggregate demand and contract the economy, thus stabilizing prices.

Economists debate the effectiveness of fiscal stimulus. The argument mostly centers on crowding out, a phenomenon where government borrowing leads to higher interest rates that offset the stimulative impact of spending. When the government runs a budget deficit, funds will need to come from public borrowing (the issue of government bonds). When governments fund a deficit with the issuing of government bonds, interest rates can increase across the market, because government borrowing creates higher demand for credit in the financial markets. This causes a lower aggregate demand for goods and services, contrary to the objective of a fiscal stimulus. Neoclassical economists generally emphasize crowding out while Keynesians argue that fiscal policy can still be effective especially in a liquidity trap where, they argue, crowding out is minimal. Some classical and neoclassical economists argue that crowding out completely negates any fiscal stimulus; this is known as the Treasury View, which Keynesian economics rejects. In the classical view, the expansionary fiscal policy also decreases net exports, which has a mitigating effect on national output and income. When government borrowing increases interest rates it attracts foreign capital from foreign investors. This is because, all other things being equal, the bonds issued from a country executing expansionary fiscal policy now offer a higher rate of return. Fiscal policy is the exercise of the government's control over public spending and tax collections for the general economic policy.

Now we will use ISLM model for examining the effectiveness of macro economic policies. The IS-LM model, as a vehicle for policy analysis, has a substantial influence on the policy makers and academicians. Like the developed countries, the IS-LM framework remains important for students to learn in the developing countries because of the benefits it offers in clarifying their thinking about the implications for practical policy issues. Monetary policy implies the variations in the supply of money

brought about by the central bank of a country with a view to achieve certain economic goals. The fiscal policy, on the other hand, means the use of government spending and taxes as the instruments for the achievement of those very goals. In the present discussion, we shall however, restrict ourselves only to one dominant goal of economic policy, viz. raising the level of real income. The relative effectiveness of the monetary and fiscal policies in raising the level of real income and influencing the rate of interest can be assessed through the *IS-LM* general equilibrium framework.

We have already discussed that the LM function, given a fixed supply of money, slopes upwards from left to right. But the entire LM function can be divided into three distinct ranges – the Keynesian range, the classical range and the intermediate range.

At one extreme, the LM function is perfectly elastic at the minimum possible rate of interest. The speculative demand for money is perfectly elastic at this rate of interest. The asset holders are ready to exchange securities for cash at the existing security price even up to an unlimited extent. This is what we call the liquidity trap. This range may be denoted as the Keynesian range, since in Keynes' General Theory, this particular situation was greatly emphasized and it is within this range that the monetary policy becomes completely ineffective.

On the other extreme, at some very high rate of interest, the demand for money for idle balances becomes zero. The bond-holders do not anticipate any fall in the asset prices and they prefer to hold only securities and no idle cash. In this section, the LM function is perfectly inelastic and this range of LM function is known as the classical range. In between these two extremes of the pure classical and pure Keynesian ranges, there is an intermediate range of LM function with varying degrees of elasticity. This intermediate range is a blend of the pure classical and pure Keynesian ranges.

The relative effectiveness of monetary and fiscal policies over these ranges can be analysed with the help of Fig. 5.11.

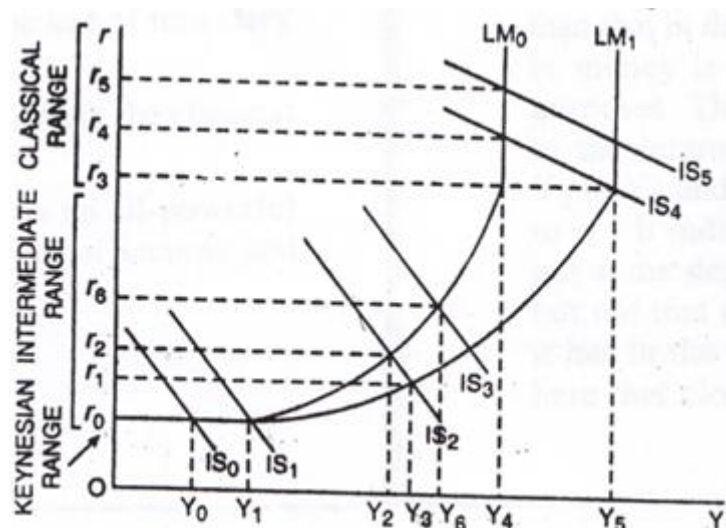


Figure 5.11

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