BBA 3311Macroeconomics Study Module

স্থুন অব বিজন্তির SCHOOL OF BUSINESS



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school of Business বাংলাদেশ উন্মুক্ত বিশ্ববিদ্যালয়

BBA 3311Macroeconomics

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Unit Highlights

- ➤ THE SUBJECT MATTER OF MACROECONOMICS AND ITS METHODOLOGICAL UNDERPINNINGS
- ➤ MACROECONOMIC THOUGT: CONTENDING SCHOOLS AND A UNIFYING FRAMEWORK

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Lesson-1: The Subject Matter of Macroeconomics and Its Methodological Underpinnings.

After completion of this lesson you will be able to –

- > see what types of questions are raised in macroeconomics and how they do differ from those of microeconomics;
- ➤ appreciate why macro- and microeconomic approaches are both useful and, in fact, complementary to each other;
- > see what the major macroeconomic policy objectives are;
- > understand why these objectives often conflict, posing difficult choice problem for the policy makers.

What macroeconomics is about?

Modern economics is usually divided into two broad domains- microeconomics and macroeconomics. The questions to which answers are sought in each domain are important. They are important because finding reasonably satisfactory answer to these questions is intimately linked to a country's economic welfare. What types of questions are asked in macroeconomics? How and why do they differ from questions asked in microeconomics?

At a very general level, one can say that the job of macroeconomics is to analyze the behavior of the economy as a whole. It is concerned with the overall levels of a country's output, employment and prices. By contrast, microeconomics studies the behaviors of individual decision making units such as individual households, firms or landlords. In microeconomics, the unit of study is the part, not the whole (as in macroeconomics).

For instance, in microeconomics we try to explain how much a single firm will produce, what input combintion it will use to minimize the cost of producing a given level of output and what price it will charge in order to maximize profits. In doing so, microeconomics essentially assumes that total output, total employment of factors and total spending for all goods and services are given. Then it tries to explain how the composition of total output and total employment is determined in terms of output and employment of individual firms and industries.

Demand for particular products and services can change as a result of changes in relative prices. Microeconomics, in this case, will try to answer how the relative price changes are likely to trigger reallocation of a country's resources in the production of various goods and services. In other words, it will try to predict the alterd composition of goods and services following the changes in relative prices. Individual decision making units (e.g. households and firms) in making their decisions try to pursue their best interests (e.g. maximization of satisfaction or profits). Millions of such isolated decisions are coordinated by market mechanism through price signals. For example, if the price of product A rises relative to the price of product B, it will be a market signal for the producer of A to increase the production of A, while for the producer of B it is a signal to reduce the production of product B. Resources are, a as result, diverted from the production of B to the production of A. Moreover, in the interest of cost minimization (a necessary condition for profit maximization) firm will be induced to employ factors of production in those activities where they are relatively more productive.

In short, optimal allocation of given resources is the principal concern of microeconomics, ignoring the question of whether the economy's resources are fully employed or not. Macroeconomics, on the other hand, ignores the question of whether the resources actually employed are efficiently allocated or not, and concentrates on the question of whether and why some of the economy's resources remain unutilized. Macroeconomics takes as given the composition of demand and supply in various markets so as to concentrate on economy wide issues such as unemployment and inflation. In contrast, microeconomics, by ignoring the issues of inflation and unemployment, focuses on how individual markets allocate resources and

distribute incomes. Another way of making the above point is to say that macroeconomics takes as given (composition of output and employment) what are variables to be analyzed and understood in microeconomics, and that what microeconomics takes as given (total output and employment) are variables in macroeconomic analysis.

The distinction between the two domains (micro- and macroeconomics) may seem to have been pushed too far. Isn't the distinction too artificial? It must be remembered that the basic purpose of economics is to analyze the economic processes that determine a society's material well-being. If this is so, then it must be admitted that the distinction (and the methodological difference it implies) has proved to be immensely useful. A nation's material well-being depends on both how fully the given resources are utilized by market forces or similar institutions (a question addressed by macroeconomics) and how efficiently the resources (fully employed or not) are allocated (which is an important concern of microeconomics). When vast amounts of resources are idle, the question of optimal allocation may not be as urgent as when resources are fully or near fully employed. In the latter case, the question of optimal allocation looms large because of the scarcity of unutilized resources. Therefore, both microeconomic and macroeconomic analyses are important, in their own unique ways, to the economic well-being of a country. The two approaches are indeed complementary to each other, and the dichotomy is in fact a matter of analytical convenience in respect of the type of issues addressed.

Three Key Concerns of Macroeconomics

All market economies tend to experience fluctuations in output and employment. Sometimes output and employment expand, while at other times they contract. This pattern of contraction following expansion is known as business cycles. During the cyclical downturn (contraction) millions of people lose jobs and thrown into untold suffering. In other cases, even rapidly growing economies have been found to suffer from sustained high unemployment. Thus an important question that a macroeconomist has to answer is: What determines the levels of aggregate output and why do they fluctuate? On the ability to find correct answer to these questions depends the formulation of appropriate policy response to keep unemployment at a low level.

The general price level may be too high and may go on increasing for a long period. When this happens the economy is said to be experiencing inflation. A high inflation like high unemployment is socially undesirable. Prices measure economic values. Prices cannot play this role adequately during inflation. Rapidly rising prices may cause arbitrary redistribution of purchasing power between social groups. For example, the fixed income earners and debtors lose (for no fault of their own), while flexible earners and debtors gain (for no demostrable virtues). Real rates of interest change rapidly during inflation. Long-term economic contracts become difficult by undermining rational economic calculations. Therefore, another important macroeconomic question is: How is the general price level determined and why does it change? An accurate answer to this question depends on the attainment of much desired price stability.

Finally, a country may like to increase its rate of economic growth on which depends its long-term prosperity. Without long-term income growth it cannot hope to enjoy increasing real wages and living standards. Thus, to understand the factors that determine the long-term growth potential of a country is a major goal of macroeconomics analysis.

Keeping unemployment at a low level and attaining price stability are known as stabilization of the macroeconomy. Stabilization is the concern of shortrun macroeconomic analysis and policy. While long-term growth of the economy is quite important, much of macroeconomics is concerned with shortrun stabilization problems.

The problem of conflicting Objectives

Each of the three goals- low unemployment, price stability and long-term growth- is important in itself; and ideally each should be pursued as earnestly as possible. Unfortunately, often conflicts may arise in the pursuance of all three goals simultaneously; there are undesirable trade-offs among the goals which policy- makers have to contend with. For example, if the budget deficit is lowered, output and employment may fall in the shortrun. To stimulate long-term growth, investment is required in physical and human capital; but doing this requires the sacrifice of present consumption for the benefit of increased consumption by future generations. Besides, stimulating high levels of output and employment may cause price inflation. In fact, the choice between low inflation and low unemployment is a matter of agonizing policy decisions in the context of short run stabilization.

These conflicts give rise to differences of opinion and approach among professional economists, politicians and policymakers. What can the government do about each of the macroeconomic ills? What should it do? What is the best way of tackling each problem? These questions have been at the centre of macroeconomics policy making for a long time, and, not surprisingly, they have divided the profession as it tries to develop alternative models and interprets experiences in various parts of the world.

Short Questions

- 1. "Macroeconomic variables are based on abstraction from reality". Is the statement true? If so, explain why abstractions are necessary.
- 2. "The variables of microeconomics are 'givens' in macroeconomics". What does this statement mean? Is this methodological stance meaningful?
- 3. What is meant by stabilization of the macroeconomy? When is it necessary?
- 4. "The micro vs. macro distinction in economics is not based *solely* on size." Do you agree? Give examples.

Broad Questions

- 1. Briefly explain the subject matter of macroeconomics. How does it differ from that of microeconomics?
- 2. Do you think that the distinction between micro- and macroeconomics is unreal and unnecessary? Give reasons.
- 3. What are the key concerns of macroeconomic policy? Explain briefly.

Lesson 2: Macroeconomic Thought: Contending Schools and a Unifying Framework

After completion of this lesson you will be able to –

- > gain historical insight into how a disastrous experience forced economists to take a fresh look at the analysis of major macroeconomic problems;
- > understand why the same macroeconomic issues have led economist to take different policy positions;
- appreciate why differences of opinion do not necessarily imply a weakness of the discipline of macroeconomics;
- how a unifying framework of aggregate demand and aggregate supply can accommodate the differing viewpoints.

Evolution of Macroeconomic Thinking

The year 1936 is a watershed in the evolution of thinking about macroeconomics problems. This is the year in which appeared J. M. Keynes' revolutionary book: *The General Theory of Employment, Interest and Money*. The publication of this book marks the beginning of modern macroeconomics. What prompted the writing of this revolutionary book? It was the Great Depression of the 1930s. The Depression was so severe that, in many western market economies including that of the United States, production of goods and services declined by about one-third between 1929 and 1933. About a quarter of the resources became idle. Business investments came to a standstill and stock market values slumped. In fact, the Great Depression was a worldwide event with few market economies escaping its ravages.

The economists of the time had no good explanation of what had been happening and no workable remedies. Not that the economists of this period (whom Keynes dubbed classical economists) were unaware of the periodic departures of output from its full employment level. But they thought that such departures were temporary and that forces inherent in the market economy (fexible wages and prices) could quickly lead the economy back to full employment. Before the Great Depression, there were few severe and long-lasting depressions, particularly in the first half of the 19th century. Some economists of this period, notably Robert Malthus, raised dissenting voices against the possibility of the claimed automaticity. They pointed out that aggregate demand may not always be high enough to absorb full employment output, forcing the economy towards depression. But they failed to provide any convincing theoretical explanation of why any such deficiency of aggregate demand might arise.

It was Keynes and his revolutionary work referred to earlier provided this explanation. He demonstrated that departures from full employment could be large and persistent. He used convincing theoretical arguments in support of his contention. He argued that market forces cannot be relied upon for the quick restoration of full employment, making public action necessary. Keynes theory and his policy prescriptions were successfully applied in the western market economies in the post-depression period. Roughly speaking, up to the early 1970's Keynesian remedies of demand management through discretionary fiscal policy had enabled policymakers to keep depressions within tolerable limits.

Macroeconomic thinking has evolved in diverse ways since the days of J. M. Keynes. Partly this has been due to new approaches to old problems and partly to new challenges faced in the form of previously unknown problems afflicting the macroeconomy. Keynes' emphasis was on fiscal policy through which any deficiency in aggregate demand could be met by appropriate government spending. Soon the primacy of fiscal policy as a tool of demand management came to be challenged. Milton Fridman of the University of Chicago (later a Nobel Laureate) claimed that the pride of place should be given to monetary (rather than fiscal) policy. In fact, he provided an impressive explanation of the Great Depression in terms of gross failures in monetary

management. Friedman and his followers came to be known as monetarists. Over the decades the differences between the monetarists and the fiscalists (Keynesians) have narrowed down considerably. At present the dispute is more about emphasis rather than about fundamentals.

But the influence of the monetarists has gradually declined with the rise of what has come to be known as new classical macroeconomics led by Robert Lucas, Thomas Sergent, and Robert Barro. In this approach, the emphasis is (as in pre-Keynesian economics) on flexible wages and prices in the context of a new feature called the rational expectation hypothesis. Emphasizing this new approach to expectation formation, the votaries of this school have argued that when wages and prices are flexible any government policy designed to influence real output and employment is foredoomed to failure. Not all have agreed. For the drastic conclusions of the New Classical School to hold, it has been pointed by its critics, one has to assume that people can and do behave like super computers in processing all available information to alter their behaviour in such way as to make any anticipated government policy totally ineffective. Yet the critics have been forced to take serious note of the rational expectations based forward-looking behaviour by economic agents especially in the financial sector. Another group known as the Supply-Sides became famous in the U.S during the presidency of Ronald Reagan. This group likes to put emphasis on policies that influence the supply side of the market, particularly in the fight against stagflation (rising inflation as well as unemployment).

Where does it all leave us? Are we to conclude that macroeconomics is an ill-assorted body of thoughts with contending schools offering contradictory policy advice? Nothing is further from truth. Despite the controversies and cross-currents, macroeconomics has been successful in developing general analytical models in which different approaches and emphases can be accommodated and their implications examined, as we shall soon see. But, being first and foremost a policy science, controversies will rise, melt away and newer ones will crop up; this is a sign of vigour rather than of weakness.

A Highly General Model of Macroeconomics

In unit 1, l.esson 2, we have seen how different groups of economists have developed different responses to macroeconomic ills of a country. We have also emphasized that all these views can be accommodated within a very general model. Such a model is capable of handling the different approaches to analysis of how macroeconomic problems arise and how they should be remedied. Such a general model is provided by the Aggregate Demand and Aggregate Supply model of the macroeconomy. Let us examine the basis for this claim.

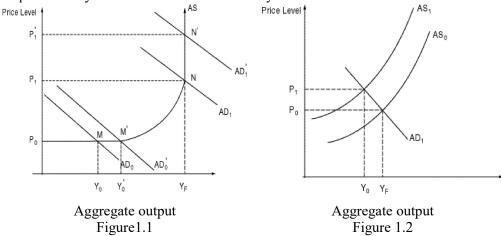
The demand-supply model of particular goods and services must be familiar to students who have taken a basic course in microeconomics. In such a model, we want to explain how the price of a commodity or service is determined and why it changes. Here both the demand and the supply side factors play their role in equilibrium price formation. The equilibrium price changes when the demand or the supply curve shifts as a result of changes in factors (other than own price) which affect demand (such as income) and supply (such as the input prices). A very similar apparatus is useful in analyzing the basic questions asked in macroeconomics. They relate to the determination of aggregate output, the general price level and the long term growth of the economy.

In Fig 1.1 each of the aggregate demand curves (AD) has been drawn as a negatively sloped function of the general price level (P), while the aggregate supply function (AS) has a positive slope only for a given price range for reasons to be explained soon. At this stage, let us not be too fussy about why these curves have the shapes they have. (In fact, much of macroeconomics is about understanding this very thing). A heuristic explanation will, however, be offered.

The aggregate demand is the total demand for goods and services. Or better still, we call it the total demand for "output" of the economy by consumers, firms, government and the foreigners.

As you might have suspected, the term output, represents a wide variety of goods and services produced and hence it must be an abstraction (After all, no one has seen or consumed a unit of output, though you must have seen or consumed a loaf of bread, which is a special case of output!) Unreal though it may sound, the entire edifice of macroeconomic theory is built upon such abstractions (You can assure yourself that these abstractions are quite useful not just theoretically but empirically also because their operational counterparts have been devised to make their measurements possible). It has been assumed that at higher prices less of output will be demanded by consumers, firms, government and the foreign buyers. The aggregate demand curve can be shifted upward or downward by monetary and fiscal policy.

The aggregate supply curve (AS) shows the total quantity of goods and services (output) that producers will be willing to supply at various price levels in a given period. How much will be supplied at a given price level depends on the productive capacity of the economy and business decisions with respect to profitability. The productive capacity itself is determined by such factors as the stocks of factors of production, their prices and the state of technology. How much price increase (if at all) the producers will demand to supply more output depends crucially on how far the actual output is below the potential output (which is the maximum output that could be produced by full utilization of the economy's



resources). When a vast amount of resources is unutilized, output could probably be expanded without price increases (because input price increases are unlikely). On the other hand, if the economy is already producing at the potential level, any attempt to increase output by increasing demand will only lead to price increases (inflation). In between these tow extremes, stimulation of aggregate demand will lead to some mixture of output increase and price rise; output will rise less, and price more as the output approaches the potential capacity. It is to incorporate these possibilities that the AS curve in Fig 1-1 has been drawn with three distinct segments - a horizontal segment (P_OM'), a vertical segment (NN'), and a positively sloped intermediate segment (M'N).

We are now in a position to find the equilibrium level of output and the price level (A warning: the demand supply framework of microeconomics has a superficial visual resemblance with the aggregate demand and aggregate supply framework of macroeconomics, dispite the fact that some of the mechanism of price formation apply to both frameworks. It must be noted that the AD and AS schedules of macroeconomics are determined by vastly different forces form those of their microeconomic counterparts. For instance, the demand curve of the micro theory shows how much more will be demanded of a commodity if its price falls, assuming that all other prices and income of the consumers are unchanged. In contrast, in the case of aggregate demand of macro theory, demand for output changes when the general price level changes (where all prices are in principle variable). To continue with the determination of price-output combination, let us

suppose that initially the relevant aggregate demand curve is AD_0 (Fig. 1-1), which intersects the flat segment of the aggregate supply curve (AS). The equilibrium output is Yo and price level P_0 . Assume that Y_F is the potential output. This implies that the actual equilibrium output (Y_0) is far below the potential output, indicating a great deal of unemployment. A part of this unemployment can be reduced by stimulating aggregate demand, say, by shifting the AD_0 to AD_0 through fiscal or monetary policy. At this juncture, we can ask: Does the economy need a Keynesian (fiscal) or monetary remedy? In terms of the model presented here, the answer is that either will do; it cannot be one, but not the other. We see then that in this particular situation both the Keynesians and the monetarists will agree on the same general remedy - the expansion of agreement demand.

As a different scenario, assume that the aggregate demand schedule is AD_1 , which intersects that the vertical segment of AS at N which corresponds to the potential output, Y_F . If for some reason (e.g. an increase in foreign demand) AD_1 , shifts to AD_1 , the extra demand will not bring forth any additional output; it will only raise the price level from P_1 to P_1 . In the intermediate range of AS (M'N), as can be seen by looking at Fig. 1-1, any stimulation of aggregate demand will cause *both* output and price level to rise. The steeper the AS, the larger will be the price rise and the lower the output expansion.

The AD-AS framework then shows, in very general terms, how the problem of stabilization of the macroeconomy can be approached. Given the AS curve, inflation can be cured by suppressing aggregate demand (expenditure cut) while to fight unemployment what is needed is demand stimulation (increased expenditure). This framework also shows why the agonizing trade-off between inflation and unemployment arises, at least in the shortrun. Consider what happens as AD moves back and forth along the intermediate range of the aggregate supply curve (AS). It is easy to see that lowering unemployment increases inflation, while lowering inflation raises unemployment. Not surprisingly, there is no such trade-off in the horizontal and vertical range of the aggregate supply curve. From this discussion, it should also be clear that the shape and position of the aggregate supply curve is crucial for the success or otherwise of the demand management policy.

The AD-AS model can also be used to explain why the supply side economists insist on policies which provide incentives to work (increased labour supply) and to invest (increased productive capacity), when the economy is facing stagflation (stagnation with inflation). To appreciate this point, let us turn our attention to Fig. 1-2. The economy is initially at full employment output, Y_F , which corresponds to the intersection of AD and AS_0 . Now suppose that because of an adverse supply shock (such as the oil price increase in 1973), the AS curve shifts to AS_1 , causing output to fall (from Y_F to Y_1), and the price level to rise (from P_0 to P_1). In this case of stagflation, the supply siders argue that demand management policy will be of little help. Raising aggregate demand will reduce unemployment, but will worsen inflation; reducing aggregate demand will cause inflation, but would worsen unemployment. Therefore, the appropriate policy, they argue, would be to shift AS_1 back to AS_0 by supply side measures. Finally, the ideas of the New Classical School can also be reflected in the AD-AS framework. The essential argument here is that the AS curve is vertical even in the short run, so that it is impossible to affect real output and employment through government policies. What about the long run growth? Can the

AD-AS framework explain why a country's growth rate of output changes over a long period? Yes, it can. Over a very long period, the supply of labour, capital, and other inputs increase, and better technology is invented. As a result, the AS curve shifts continuously to the right, the speed of which determines how rapidly potential output will grow in the long run.

In short, the AD-AS model is a framework, which is versatile enough to enable us to analyze all the basic concerns of macroeconomic policy. It is also flexible enough to accommodate the ideas of different Schools of thought. It is true that the views of different Schools are much richer in detail than can be captured in the AD-AS model. Nevertheless, it remains true that their ideas impinge, in one way or the other, on the aggregate demand or the supply side of the model.

Short Questions

- 1. "A great economic disaster in the early 1930s brought about a fundamental change in the ways in which economist used to think about macroeconomic issues" Explain.
- 2. What is the main conclusion of the New Classical School of macro economists? Why do they have to depend on the rational expectations hypothesis about expectation formation for the validity of their conclusion?
- 3. Briefly explain why the supply-side economists put a lot of emphasis on productivity increase and supply-side tax cuts to fight stagflation.
- 4. "The similarity between demand-supply framework of analysis in micro- and macroeconomics can be misleading beyond a certain point." Why?
- 5. Briefly explain the reasons why there are sometimes a trade-off between inflation and unemployment.

Ouestions

1. Give a brief account of how macroeconomic thinking has evolved over the years since the Keynesan revolution.

Unit Highlights

- MEASUREMENT OF ECONOMIC ACTIVITY: THE CONCEPT OF GDP AND RELATED ISSUES
- ➤ MEASUREMENT OF ECONOMIC ACTIVITY: NEED FOR REFINEMENT OF THE GDP CONCEPT
- ➤ MEASUREMENT OF ECONOMIC ACTIVITY: THREE APPROACHES TO GDP MEASUREMENT
- ➤ NON-INCOME DETERMINANTS OF CONSUMPTION

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Lesson-1: Measurement of Economic Activity: The Concept of GDP and Related Issues

After completion of this lesson you will be able to –

- > understand the importance of measuring macroeconomic performance
- > to see how the GDP is used as an indicator of total output produced in the country in a given period
- > appreciate why some practical compromises are usually made in GDP computation.

Measurement of Economic Activity & Economic Performance -I Introduction:

In Unit 1, we have seen that macroeconomic analysis depends heavily upon concepts like national output and general price level which are basically abstract constructions. We have also emphasized that these constructions have been invented because they represent useful theoretical categories the interaction among which can throw light on how the entire macroeconomic mechanism functions. But it would be poor comfort if for these theoretical concepts, however well-defined, corresponding quantitative measures could not be devised measures which would faithfully, if not perfectly, represent these concepts.

In fact, when Keynes' General Theory of Employment Interest and Money appeared in 1936, his conclusions could not immediately be subjected to empirical tests, because the required data corresponding to his theoretical notions did not exist. Several years later, a system of measurement (considerably influenced by Keynes' theoretical structure itself) was desired. This framework came to be known as National Income Accounting. The leading figure in this immensely important enterprise was professor Simon Kuznets of Harvard University who was awarded the Nobel Prize in Economics in 1971 for his contribution. The task has undoubtedly been painful and arduous, because many tricky conceptual issues had to be solved before translating theory into numbers. Solutions to many of these questions had to be arbitrary and based on conventions. The results have not always been satisfactory, but despite its many limitations, the framework of national accounts has proved quite useful not only for testing existing theories, but for the construction of more sophisticated ones.

Measuring Levels of Economic Activity

Recall form Unit 1, that one major concern of macroeconomics is why economic activities sometimes surge up and slow down at other times. In other words, the macroeconomist wants to know why the national product fluctuates around the potential level form time to time. Carefully note that before we try to explain *why* this has happened, we must know at first that this has *indeed happened*. For otherwise there is nothing which has to be explained and accounted for. More precisely, we want to know whether and how far the national output has gone up or down; we need a measuring rod for the nation's economic activity or its output.

The Gross Domestic Product (GDP)

The Gross Domestic Product is the most comprehensive measure of a country's output in a given period. It is defined as the sum of the money values of all currently produced goods and services produced within a country during a specified period of time, usually a year.

Several important features of this definition should be carefully noted.

Firstly, GDP represents the money value of goods and services (customarily called product). There could be a mind-bogling variety of goods and services- milk, oranges, dance performance, hair cut, transport services, aeroplanes, tanks, missiles and so on. Varieties as such would not have mattered if all of them could meaningfully be expressed in a common unit. To appreciate the

problem involved, try to add 10 hours of dance performance to 15 hours of transport service. Both are expressed in units of hours so that in total you get 25 hours of service. But service of what? You may be tempted to say: 25 hours of music-travel service. Humour apart, you soon see how misleading and meaningless this characterization is. As another example, try to add 10 litres of kerosine to 15 metres of a road. Here the unit problem looms large, the characterization problem still remaining. Examples of difficulty involved can be easily multiplied. The basic point, however, is clear; straightforward addition across goods and services will not work, and we must bring all goods and services to a common unit. The problem is solved quite naturally, but not most satisfactory (guess why?), by using market prices. The quantity of each kind of goods and services is multiplied by its market price and then the money values are added together to get the GDP. Now you have a meaningful total (at least not as meaningless as before). Note that the use of market prices is not quite arbitrary, because under certain circumstances (e.g. absence of externalities and uncertainties), market prices represent the relative value of commodities i.e. the willingness to pay at the margin.

Secondly, the GDP of a particular period includes goods and services produced during that period only. Since GDP is supposed to be a measure of production rather than of sale, sales of items produced in previous periods are explicitly excluded. This implies that many market transactions of the current period are excluded from the calculation of current period's GDP. For example, sales of stocks, bonds and real estate are excluded, because they do not represent any new production. The purchase of a used car does not represent any new production and should therefore, be excluded from current GDP (its original value was included in the GDP of the period in which it was produced); however, if the sales value included some costs of renovation or repair, these could in principle be part of the current GDP.

Thirdly, not all currently produced goods and services are included in current GDP. Only that part which represents final goods and services will find place in the GDP. This raises two question. First, why should a part of the currently produced goods be excluded? Secondly, even if the principle is admitted to be right, how would the national income accountant tell final goods and services form those which are not? In order to answer these questions, we first distinguish between intermediate goods and final goods. Final goods are those which are purchased by their ultimate users. On the other hand, the intermediate goods are those which are purchased for resale, or for use in producing another good and therefore get 'used up' in the production process. The intermediate goods are excluded because their inclusion will unduly inflate the value of GDP and thus give a misleading (and rosy!) picture of the macroeconomic health of the country. To see why, think of a loaf of bread (currently produced) that you have purchased for consumption for \$ 1.00. This price obviously includes the costs of wheat, flour and dough that went into the making of bread. Inclusion of these costs would involve double (even multiple) counting. In short, it is to avoid the type of double counting noted above that the national income accountant includes (wisely!) the value of only final goods and services in the calculation of the gross domestic product. But while the principle is valid, its practical application poses some difficulties, because some categories of goods would seem to possess the attributes of both final and intermediate goods. One way of going around the difficulty is to use the method of value added in GDP calculation as explained later.

Fourthly, if we ignore some imputations which are sometimes successfully made, usually goods and services that pass through organized markets get counted in the GDP. Often the national income accountant fails to include in GDP such activities as household work done by members, the do-it-yourself repairs work and the value of leisure. These very much belong in GDP, but any attempt to include them faces two problems. First, it is hard to get accurate record of the amount of work done in these categories. Second, often no meaningful prices are available for their valuation. The consequences of excluding these non-market activities can sometimes be quite

serious, especially when we compare the standard of living between developing and developed countries on the basis of measured per capita output.

Finally, it should be noted that GDP is a flow variable, because it carries a time dimension (so much per period).

Computation of GDP: Problem of strict conformity with definition

Actual computation of GDP has to make some compromises with the strict requirement of its definition.

First, the national income accountant has to face the problem of valuation of government output. The output of the private sector is valued at market prices. No such prices are available for government output. 'Output' produced in government offices, services of the fire fighters, police and defence personnel do not pass through organized markets. (Indeed in some cases, it is difficult to define what the government output is!). In the absence of market prices, the national income accountant has no alternative but to depend on input prices. He calculates the costs of inputs used in the production of government output and substitute them for the value of government output. You may ask: why doesn't he impute a market price to government services in the same way as he imputes a market price for the services of owner-occupied houses? Cann't he get a price more comparable with valuations used in the private sector? This is a complex issue. A short and simple answer is that, in the private sector, valuation includes the productivity of capital and entrepreneurship, while in the government sector neither is recognized. Of the two, the treatment of public entrepreneurship is especially problematic, because these is no way in which one could impute a value to public entrepreneurship.

Secondly, the way the investment goods are actually treated in national accounts may not appear to be strictly in accordance with the definitional regour. The definition says that only final goods should be included in the GDP (and intermediate goods excluded). Investment goods (factories, generators, machine tools and the like) might appear to be intermediate goods, because they are purchased for use in producing other goods, not because they have any inherent value in themselves. And yet they are included in the GDP. Why is this? To understand the rationale behind this practice, remember that these items are never sold to final consumers. So, where do they belong? Can they simply be excluded as intermediate goods? A little reflection will convince you that these items cannot be treated as intermediate goods in the same sense as flour is in the production of bread, a final good of consumption. Flour is completely used up in the production of bread, but machine is a durable good and is not entirely 'used up' in the production of whatever it is used to produce. Only a part, called depreciation, is used up, and can logically be treated as an intermediate good. The value of the machine minus depreciation should then he treated as the value of final good demanded by the firm buying it.

Finally, there is another category of goods which are not actually sold, though produced in the current period. The value of these goods are included in GDP as inventory investment. These goods may or may not be final goods in the strict sense. Consider the example of a miller who purchased 100 tons of wheat for the production of flour at the beginning of the period. Suppose further that his opening inventory was 30 tons of wheat, but at the end of the period the inventory goes up to 70 tons. What this means is that the miller could not use the entire amount of wheat he purchased at the beginning of the period- he used only 60 tons, the rest going to swell his inventory of wheat. The question is how to treat this unused stock of wheat. It is clear that the unsold stock represents current production and hence, in some way, should find place in the GDP. There is a further problem here. Wheat is an input in the production of flour which itself is an input in the production of bread (a final good). So wheat as well as flour is an intermediate good. Can an intermediate good be included in the GDP under special circumstances? And what are those circumstances?

Note that if the unused stock of wheat were actually used for producing flour and the flour for producing bread, the value of wheat would have been included in the GDP as part of consumption expenditure in the form of the price of bread. But the wheat has actually gone to swell the inventory and therefore should be regarded as part of investment (or, else it would escape counting altogether, resulting in an undervaluation of the final product). By similar reasoning, if the millers as a group experience an inventory accumulation of flour (now an end product) the addition to inventory should be recorded as inventory investment (a demand for final goods by firms). Why call it investment? If you like you may think along the following lines.

By definition, investment goods are those which are purchased for expanding capacities to produce other goods, including final consumption goods. If that is so, the accumulated inventory of raw materials, semi-finished or finished goods can be thought of as something that enhances the capacity to produce in the following period. In this sense, inventory increase is like investment in plant and equipment. Incidentally, it should be clear from the discussion above that *final* products need not be identical with *finished* product (e.g. wheat is not a finished product in any conventional sense).

Short Questions

- 1. How does the National Income Accounting framework help in the development of macroeconomic theory and practice?
- 2. Why are market prices used in the calculation of a country's GDP?
- 3. How would you justify exclusion of intermediate goods from GDP?
- 4. How are unused stock of raw materials treated in national income accounting? Explain.
- 5. A car produced in an earlier period is sold as a used car in the current period. As a national income accountant would you include its value in current year's GDP? Why? Why not?
- 6. How are unpaid services of housewives treated in GDP calculation?
- 7. Why are investment goods treated as final goods demanded by firms in national income accounts?
- 8. "Are all 'final' goods are not finished goods too". Give examples.

Ouestions

- 1. Define GDP. Bring out its essential features.
- 2. Why is it not possible to strictly adhere to the definition of GDP in actual computation? What compromises are generally made in this regard?
- 3. Examine the logic of valuing government output at cost.

Lesson 2: Measurement of Economic Activity: Need for Refinement of the GDP Concept

After completion of this lesson you will be able to –

- > understand the distinction between nominal and real GDP and why the distinction is important;
- > know about two different ways of measuring inflation- the GDP deflator and the Consumer Price Index;
- ▶ appreciate the need for distinguishing between the GDP and GNP;
- > see the difference between gross and net national product.

Measurement of Economic Activity and Economic Performance -II Introduction:

Often we are interested to know by how much the physical output of a country has changed from one period to another. For this we may try by comparing GDP figures of various years as defined earlier. But this has an obvious difficulty. This arises because GDP's are money values (sum of price times quantity). If the GDP in 1997 is \$98 and the same in 1998 is \$196, we do not know for certain how much of the increase in GDP has been due to changes in physical output and how much due to changes in prices. Assume for simplicity that a country produces only two goods - bread and honey and consider the numbers presented in Table 2-1. We see that the increase in GDP between 1997 and 1998 has been due entirely to quantity increase; the GDP in year 1998 is double that of 1997 simply because quantities have doubled with no change in prices. Comparing the GDP of 1997 with that of 1999, we see that again the GDP in 1999 is double that of 1997; but this time the increase has been due entirely to changes in prices, the quantities remaining the same. Finally year 2000's GDP is twice that of year 1997's GDP; but now the increase is partly due to increase is price and partly to increase in quantity.

By now it should be clear that if we are interested to know by how much real output has changed from year to year, simple comparison of unadjusted GDP figures will not do, because the increase (or decrease) in raw GDP could be due to price changes only, quantity changes only or to both (the more likely case). This brings us to the need for distinguishing between what are known as *nominal* GDP and *real* GDP.

Nominal and Real GDP

The nominal GDP is the value of a country's total output at the prices prevailing during the period in which the output is produced. The real GDP, on the other hand, measures the total output in any given period at prices prevailing in some base period. Nominal GDP is also known as GDP at current prices, while real GDP is sometimes called GDP at constant prices (and for good reasons). It should be clear that in order to ascertain to what extent the total output has changed in quantitative terms between years, one should compare real GDP figures of the relevant years. These figures are relevant because changes in real GDP do not reflect (by definition and construction) the effect of any possible price changes. When we divide nominal GDP by real GDP, we get what is known as implicit GDP deflator (on which more soon). Look at figures in Table 2-2 which shows the calculation of real GDP for years 1997-2000. These are all based on data shown in Table 2-1. The derivation of GDP deflator is illustrated in Table 2-3. For the calculation of real GDP, 1997 has been taken as the base year. That is, the prices prevailing in 1997 have been used to arrive at GDP figures for succeeding years. At base year (1997) prices GDP is \$196 in 1998, \$98 in 1999 and \$154 in 2000. Comparing columns (1) and (2) in Table 2-3, we see that between 1997 and 1998, the real GDP has doubled (as has the nominal GDP). This had to be so, because between the years the prices are unchanged, while the quantities in 1998 are twice as much as they are in 1997. Between 1997 and 1999, however, the real GDP is unchanged,

though the nominal GDP has doubled. This is due to the fact that between these two years, the quantities are unchanged (see Table 2-2).

Table 2-1: Calculation of Nominal GDP (in million dollars)

Goods		Year 1997			Year 1998	
	Price (\$)	Quantity (lb)	PQ(\$)	Prices	Quantity	PQ(\$)
	(P)	(Q)		(\$)	(lb)	
				(P)	(Q)	
Bread	10	5	50	10	10	100
Honey	12	4	48	12	8	96
			$\sum PQ =$			$\sum PQ =$
			98			196
			=			= GDP
			GDP			

	Year 1999		Year 2000			
Price (\$)	Quantity (lb)	PQ(\$)	Prices (\$)	Quantity (lb)	PQ(\$)	
20	5	100	13	7	91	
24	4	96	15	7	105	
	$\sum P$	Q = 196			$\sum PQ = 196$ = GDP	
		= GDP			= GDP	

Table 2-2: Calculation of Real GDP (Base year: 1997)

Goods		Year							
		1997		1998		1999		2000	
	Price(Quantity	P ₀ Q ₀	Quantity	P ₀ Q ₁	Quantity(P ₀ Q ₂	Quantity	P ₀ Q ₃
	\$)	(lb)		(lb)		lb)		(lb)	
	(P0)	(Q0)		(Q ₁)		(Q2)		(Q3)	
Bread	10	5	50	10	100	5	50	7	70
	12	4	48	8	96	4	48	7	84
Honey									
	-	-	98	-	196	-	98	-	154
GDP=									
∑PiQi									

Table 2-3: GDP Deflators

Year	GDP (\$) (Nominal) (1)	GDP (\$) (Real) (2)	$= \frac{\text{GDP Deflator}}{\text{Re } alGDP} \times 100 100$
1997	98	98	100
1998	196	196	100
1999	196	98	200
2000	196	154	127

Finally, comparing 1997 with 2000, we find that while the nominal GNP in 2000 is twice as much as in 1997, the real GDP is only 157% higher. This is what we should expect, because in this case both prices and quantities have changed; part of the increase in nominal GDP is due to

price increases, and when they are allowed for, we have real GDP change of only 57% (rather than of 100%).

Measurement of Inflation

As we already know, maintaining stable prices is an important macroeconomic goal along with maintaining stable employment. This goal is attained, if the overall price level can be prevented from rising or falling too rapidly. The common measure of the price level is a price index known as the Consumer Price Index (CPI). It measures the cost of a fixed basket of goods consumed by a typical urban household. The contents of this basket are determined usually by conducting periodic household surveys among urban consumers. Price indexes are then constructed by calculating the cost of this basket of goods (and services) for different years as prices change. Each of the index numbers expresses the cost of the market basket of goods relative to the cost of the same basket in some base period. Suppose that the base period is year 1990 and that the cost of the fixed basket of goods in 1990 prices is \$550. Assume further that the cost of the same basket in year 1995 is \$600. This means that the cost of the basket of goods is 20% higher in 1995. The index number for the base year is conventionally set at 100. Therefore, to reflect a 20% increase in prices (since the quantities are unchanged between 1990 and 1995), the index for 1995 must be set at 120. The following relationship may be used to calculate CPI for any given year.

CPI in the given year =
$$\frac{\text{Cost of the basket in the given year}}{\text{Cost of the basket in the base year}} \times 100$$

Applying the above rule to our example,

CPI for 1995 =
$$\frac{\text{Cost of the basket in 1995}}{\text{cost of the basket in 1990}} \times 100$$

= $\frac{\$ 660}{\$ 550} = 120$

Notice that CPI is a pure number (unit free).

Not all prices rise or fall in the same proportion, and besides, not all households buy the same combination of goods in the basket. As a consequence, no two households suffer precisely the same rise in the cost of living (unless, of course, all prices rise at the same rate). For example, the price index of 120 in 1995 indicates that the price level has gone up by 20% relative to that of 1990 on the average. That is, some prices may have gone up by more than 20%, some by less 20%, and some none at all (some in fact, may have declined too!). If you buy more of those goods whose prices are higher by more than 20% and I buy more of those whose prices are higher by less than 20%, then you suffer more than I do. And the index of 120 does not reflect this fact. It cannot, because there is no index number that can capture this phenomenon. Economists refer to this problem as the *Index Number Problem*. It says that when the relative prices are changing, the conventional index numbers can at best represent how an 'average' household is affected; there is no perfect index number that can truly represent every household's position.

Measurement of Inflation: CPI Vs. GDP Deflator

Both the consumer Price Index (CPI) and the GDP deflator can be used to measure price level changes (inflation). As mentioned earlier, to get the GDP deflator for a given year we divide that year's nominal GDP by the real GDP of the same year. That is, GDP deflator = $\frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100$

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

This deflator measures the change in prices between the base year and the current year. Using the example in Table 2-3, we can illustrate this. For example, between 1998 and 2000, the rate of inflation

$$\pi = \frac{\text{Deflator index (2000) - Deflator Index (1998)}}{\text{Deflator Index (1998)}}$$
$$= \frac{127-100}{100} \times 100$$
$$= 27\%$$

The price has gone up by 27%. In exactly analogous fashion, the rate of inflation can be measured by using the CPI as follows

Rate of inflation =
$$\frac{\text{CPI(given year)} - \text{CPI (last year)}}{\text{CPI (last year)}} \times 100$$

If, for example, CPI (given year) = 230 and CPI (last year) = 200, then the rate of inflation is,
$$= \frac{230-200}{200} \times 100$$

$$= 15\%$$

Economists generally prefer the GDP deflator as a measure of inflation to the Consumer Price Index. Note that the two indexes are based on different market baskets. The CPI basket is based on budget of the typical urban consumer. The GDP deflator, on the other hand, includes in its basket all goods and services (including those newly produced and imported) on which the GDP is based. In addition, the latter basket includes investment goods as well government output. Therefore, the GDP deflator is the most comprehensive measure of inflation.

GDP and GNP

For some purposes a distinction is necessary between the Gross Domestic Product (GDP) and the Gross National Product (GNP). We know already what GDP represents. What is GNP? The GNP is the value of currently produced final goods and services in a given period by domestically owned factors of production. How does the definition of GNP differ from that of GDP? Only in one important respect. For GDP, the output refers to goods and services produced within the country by factors of production, domestically owned or not; some may be owned by foreigners. For GNP, the output (and hence income) output produced (and thus income received) may be within or outside the country, but the factors of production employed must be owned by the country's nationals. For instance, a part of US GDP represents profits earned by Honda Corporation of Japan from its manufacturing facilities in US. These profits are part of Japanese GNP, because they are returns to Japanese factors of production (capital & entrepreneurship) employed abroad. Similarly, the profits of US owned enterprise in Japan (a part of Japan's GDP, but not of Japan's GNP) are to be included in US GNP. In short, some domestically owned factors may be employed abroad, while some foreign owned factor may work in the home country. When these two flows of income (in opposite directions) are taken into account, we can calculate what may be called "Net Factor Income from Abroad" which can be zero, positive or negative, depending on the relative magnitudes of the opposite flows. Therefore, we can write with the following identify:

GNP = GDP + Net Factor Income from Abroad.

Another way of driving home the distinction is to say the following:

The GDP measures the *output* (hence income) *produced* in a country, while the GNP is the income *received*(not necessarily form domestic production only) by a country.

Since the difference between GDP and GNP is the net factor income form abroad, for many countries the difference is small, for others large. For instance, the difference between the two is quite small for US, while for Switzerland the difference is quite substantial.

Gross And Net Domestic Product

To produce the volume of goods and services included in the GDP, the capital wears out or depreciates. A part of the capital get used up in producing the period's output. Domestic product will be overestimated, if no allowance is made for this wear and tear. A correction is necessary because to keep the productive capacity intact, fresh investments commensurate with depreciation are required. Or, to look at it differently, capital 'used up' in the production process should logically be treated as an intermediate good. We know that intermediate goods are to be excluded form national product in order to avoid double counting. Domestic product is 'gross' in the scense that it does not provide for depreciation of capital. Net Domestic Product (NDP) is equal to GDP minus capital consumption allowance (CCA) which is a measure of economic depreciation of capital.

NDP = GDP - CCA (Depreciation)

Now unfortunately it is difficult to accurately estimate the depreciation of the capital stock. As a result, the NDP figures for succeeding periods will be vitiated by any inaccuracy in the estimation of depreciation. Therefore, to avoid errors, the economists and policy makers prefer to work with the GDP, though in theory NDP is recognized to be a better measure of a nation's output.

Questions for Review

Short Questions

- 1. "Economists like to distinguish between nominal and real GDP, because nominal GDP comparisons for different time periods cannot provide a true picture of physical output changes." Do you agree? Give reasons.
- 2. How would your characterize the base year used for calculation of real GDP? What makes the nominal and real GDP of the base year equal?
- 3. Is it possible for the real GDP to decline, even when the nominal GDP is higher? If so, under what circumstances is that possible? Give examples.
- 4. "The consumer price indexes use fixed quantity weights". Do you agree? Why?
- 5. Why is the GDP deflator usually preferred by economists and others as a measure of inflation?
- 6. What is an Index Number Problem? Why does it arise?
- 7. In what sense are CPI's pure numbers? Why are they so?
- 8. Explain the general circumstances in which the GDP of a country can exceed its GNP and vice versa
- 9. Why do economists work with GDP figures, even though they recognize that NDP is a better measure of the national product?

Broad Questions

- 1. Distinguish between nominal and real GDP. Why is that distinction necessary?
- 2. Discuss the two important ways in which inflation is measured. Which one is preferred by economists? Why?
- 3. How does GDP differ from NDP? For which countries GDP is likely to exceed NDP and why?

Lesson 3: Measurement of Economic Activity: Three Approaches to GDP Measurement

After studying this lesson, you will be able to

- > understand how expenditure and income flows provide the basic framework of national accounts
- > see how GDP is calculated as sum of expenditure flows
- realize how GDP can be computed as the sum of earnings flow
- > know how GDP can be calculated as the sum of the value added by all firms in the country
- > see why all the above measures should in principle lead to the same result.

Introduction

We have so far reviewed various concepts of national product (GDP, NDP, GNP). There was hardly any discussion of how one may go about measuring national income or national product. As a step in that direction, we present first a circular flow diagram. This diagram is based on a very simple idea: the value of final goods and services produced must equal costs of production (properly defined). Or, in other words, total payments should equal total receipts (from sale). It should be noted, however, that total payments just referred to excludes one firm's payment to another for inter-firm purchases of intermediate goods. The reason for this exclusion is that at the macro level, these payments do not constitute income payments to households or government: at the aggregate level they cancel out.

The Circular Flow

In the circular flow diagram (Figure 2-1) total receipts of the producing sector (left most box) has been shown to be \$1100. Of this amount \$930 accrue to the household sector (rightmost box) as factor payments: wages (\$750), interest (\$50), rent (\$30), profit (\$100). A part of household income is collected by the government as direct tax (\$10). Another part is saved (\$20) which flows to the business sector. The remaining portion goes back to the producing sector as consumption expenditures (\$900). The government collects some of the total receipt of the producing sector in the form of indirect business tax (\$40), while the rest goes to the business sector as depreciation (\$40). Therefore total payments equal \$1100 [=\$(930+130+40)].

Circular Flow of Income & Expenditure

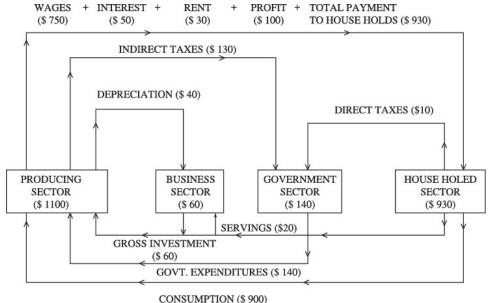


FIG 2-1: Circular Flow of Income & Expenditure

Total receipts of the government sector \$140, which is the sum of direct taxes (\$10) and indirect taxes (\$130). When the government buys goods and services from the producing sector, this amount (\$140) flows to the producing sector as government expenditure. The business sector has in its control \$60 (=\$20 (savings) + \$40 (indirect taxes)) which as gross investment expenditure are received by the producing sector. In the end, the total receipts by the producing sector amounts to \$1100 (= consumption (\$900) + investment (\$60) + government expenditure (\$140)). We, therefore, see that total payments equal total receipts. Or, equivalently, total income generated (properly defined in the accrued sense) equals total expenditures by households, businesses and the government. This is also attested by the fact that the total of leakages from the flow equals the total of spending injections as shown below:

Total leakage = household savings + indirect taxes + direct taxes (on household

income) + depreciation
=
$$\$ (20 + 130 + 10 + 40) = \$200$$

Total of injections = government expenditure + gross investment

$$=$$
\$ $(140 + 60) =$ \$ 200

Note incidentally that the equalities mentioned above hold in the sense that the magnitudes are realized ones. As we shall later see, the planned magnitudes (e.g. leakage and injections) may not always be equal.

GDP as the Sum of Final Goods and Services: The Expenditure Approach

To estimate GDP as the sum of expenditures on final goods and services by consumers, business firms and the government would appear to be the most natural procedure. For a while, we will assume that there is no foreign sector as the demander or supplier of final goods and services. We will later bring in the modifications which will be necessary to our calculations if exports and imports are to be accommodated. Let us use symbol C for final goods and services demanded by consumers, I (for investment) to denote final goods demanded by business firms and other investors, and G for the final goods and services demanded by government. We can, therefore, write

$$GDP = C + I + G$$
(i)

This relationship corresponds to the lower loop of the circular flow diagram (Fig. 2-1). Household sector's consumption demand amounts to \$900, the firms' demand in the form of gross investment is of the order of \$60, and the government spends \$140 on final goods and services. Therefore, the GDP for the hypothetical economy depicted in the circular flow diagram is \$1,100 [=\$(900+60+140)]. This is known as the **Expenditure Approach** to measuring an economy's output of goods and services. (Another name for this approach is **Product Approach**).

For the sake of concreteness, we have presented in Table 2-4 the National Income and Product Accounts of the United States of America for the year 1993. For our present purposes, we may concentrate on the left panel of this table which shows how the GDP can be calculated as the sum of the different components of expenditures on final goods and services. We see that in 1993, total

Table 2-4: Gross Domestic Product of US (1993)

(Billions of Current dollars)

E			
Expenditure/Product		Income/Cost Approach	
Approach		(Sum of Incomes)	
(Sum of final demands)			
1. Personal consumption		1. payments to factors of	\$
expenditures (a+b+c)	\$4,392	production (a+b+c+d)	5,141
a) Durable goods \$ 538		a) Compensation of	
b) Non-durable goods \$		employees (wages) \$	
1,350		3,722	
c) Services \$ 2,504	\$ 892	b) Net interest \$ 446	
2. Gross private domestic	Ψ 0,2	c) Rental income \$ 13	
investment (a+b+c)		d) Corporate profits &	
a) Residential fixed \$ 252		proprietors' income \$ 960	
b) Business fixed \$ 624			
c) Changes in inventories \$	_	2. Indirect business taxes	
16	\$		\$ 566
3. Government purchases of	1,158	3. Depreciation	
goods and services	\$ 64	1	\$ 671
4. Net exports (a-b)			
a) Exports \$ 662			
b) Imports \$ 725			
Gross domestic product:	\$6,378	Gross domestic product:	\$6,378

personal consumption expenditures (C) amounted to \$4,392 billion, gross domestic investment (I) to \$892 billion, government purchases of goods and services (G) to \$1,158 billion, and net export to \$-64 billion. We have already explained what consumption and investment mean in the context of GDP accounting. However, some comments are in order about investment. You may wonder why three qualifiers- 'gross', 'private', 'domestic'- appear before investment. 'Private' indicates that if the government had undertaken any investment, it would be recorded in Government expenditures(G). 'Domestic' means that plant and machinery sold by US firms to foreign companies are excluded from investment (I). As discussed before, a part of the capital stock is worn out in the process of production, and to keep the productive capacity unimpaired replacement investment to the extent of depreciation is necessary. In other words, part of total investment in a given period is for replacement purposes. Gross investment includes replacement investment. When we subtract depreciation (or capital consumption allowances) from gross (total) investment we get what is known as net investment. Also note that gross investment consists of three categories: residential fixed investment (construction of new houses), business

fixed investment (acquisition of new plant and machinery) and inventory investment (as explained before).

It should be carefully understood what precisely government purchases of goods and services (G) represent. It excludes all expenditures by government at various levels for which it does not receive a good or service in exchange. Expenditures for social security, unemployment compensations and veteran's benefit are good examples of such expenditures. The recipients of these benefits do not provide any good or service to the government in exchange. These expenditures are known as transfer payments. Logically, therefore, these expenditures should be excluded from G; only that part of transfer payments which is spent should be included in C. This procedure eliminates the possibility of counting the same expenditure twice: once in G and then again in C.

The item No.4 in Table 2-4 is Net Exports. Before we explain what this represents, we need to expand the GDP indentity, making room for this item.

where NX = X - M i.e. net exports (NX) mean exports minus imports. Why must we include net exports? We know that GDP is intended to measure the value of output produced within the country. If an American buys a Japanese TV, the amount spent to buy it gets included in C, total expenditure on consumption. To find the amount spent by consumers on US produced goods, the price of the imported Japanese TV must be excluded. Similarly part of I is imported. Therefore to get the correct figure for US GDP the values of all imported items must be subtracted. Further adjustments are necessary, because some of the US produced goods and services are exported (and hence used for consumption and investment by foreigners). These goods are left out when we add up C + I + G, and therefore must be added back. If these two adjustments (adding exports and subtracting imports to the C+I+G total) are made, we get the GDP identity (2), which shows how GDP is computed for an open economy. Also note that in terms of the circular flow diagram, exports (X) represents a leakage, while imports implies an injection.

GDP as Sum of Earnings or Costs: The Income Approach

This approach and the expenditure approach discussed earlier are equivalent: we get the same figure for GDP, if all items are properly defined and measured. Let us look back at the upper loop of the circular flow diagram (Fig. 4-1). This loop shows how the total receipts (=total expenditures = C+I+G) get distributed as payments to factors of production, the business sector and the government. Of the total receipts of \$1100, \$930 go to households as factor earnings (wages, interest, rent and profit), \$130 to government as indirect business taxes and \$40 to the business sector as depreciation charges. All these payments to different claimants exhaust total receipts (=C+I+G). No wonder then that the total of costs (earnings) should give an alternative and equivalent measure of a country's GDP- receipts and payments are two sides of the same transaction.

The same principle is illustrated on the right hand side panel of Table 2-4. We see that GDP GDP = Factor Earnings (1) + Indirect Business Taxes (2) + Depreciation (3) \$6,378 billion = \$(5,141 + 566 + 671) billion

GDP as the Sum of Value Added:

The Value Added Approach

Interestingly, there is a third (equivalent) way in which a country's GDP can be measured. This is known as the value added approach. In this approach, the GDP is measured as the sum of the values added by all firms in the producing sector. What is value added? It equals a firm's revenue form selling a product minus the amount it pays for other goods and services bought from other firms (intermediate goods). As mentioned earlier, the intermediate goods represent inter-firms

transactions and hence do not represent any claim on final output by firms, households or government. Therefore the value added may be represented as:

Value added = wages + interest + rents + profits = total factor payments

In terms of the circular flow diagram, the sum of total factor payments equals \$930, or in terms of Table 2-4, it is \$5,141. In both cases, the sum is not equal to GDP. Apparently this is inconsistent with the claim above that GDP is the sum of values added. In fact, there is no inconsistency. Every act of production (measuring value added) generates incomes equal to the value added inherent in the product. This is a fundamental identity which always holds. The actual factor payments do not add up to GDP in the circular flow diagram or in Table 2-1, because total receipts (C+I+G) consists partly of indirect business taxes (in the form of higher than factor-cost prices paid by demanders) and partly of depreciation (investment expenditures being 'gross'). Neither flow represents factor earnings (but payments nonethless). When, these two are added to factor payments the total must equal GDP at 'market' prices which C+I+G represents.

To elaborate on this argument, let us take an example. Suppose that a car manufacturer sells a car for \$100,000 to a buyer (a final user). In the expenditure approach, this amount will be recorded as a part of C. In the income approach, the relevant question is: what income is generated from the production of the car? Assume that they are the following:

Wages to employees	\$	40,000
Interest to bondholders	\$	6,000
Rentals of buildings	\$	5,000
Profits to shareholders	\$	9,000
	Total:\$	60,000

The remaining \$40,000 must have been spent on purchases of inputs like steel, tubing, rubber and so on. But if we trace back, we will find that the steel or rubber manufacturer too paid wages, interest, rents and profits and for intermediate inputs purchased from other firms (such as iron ore). In fact, for every firm the following identify must hold, no matter whether its product is a final or intermediate good:

Sales revenue = wages + interest + rental + profits + purchases form other firms

Summing over all firms in the economy, we can write

Total sales revenue = (Total wages + Total interest + Total rents + Total profits) + Total purchases from other firms.

But total purchases from other firms are precisely what we call intermediate goods. Subtracting intermediate good purchases from both sides of the identity, we get

Value of final goods & services = Total value added

or, GDP = Total value added.

This demonstrates that by summing up all values added we indeed get GDP.

As we have learnt before, GDP is the value of final goods and services. The question of distinguishing between final and intermediate goods in many practical application was raised in Lesson 1 of this Unit. The insistence on the final goods and services is simply to eliminate the possibility of double-counting, as explained earlier. In practice, we can easily avoid the problem of double counting by working with value added. Consider the example in Table 2-5 below.

Table 2-5: Value Added Approach

Value Added Approach Needs No Distinction Between Final And Intermediate Goods

Stage of production	(1) Sales receipts per loaf (cents per loaf)	(2) Costs of intermediate materials or goods	(3) Value added (3)= (1) - (2)
Wheat	30 —	0	30
Flour	45	30	15
Baked dough	68	45	23
Delivered	85	68	17
bread	/	1	
Total	228	143	85

Note several thing from Table 2-5. First, the end stage of production is bread making; bread is the final good. Therefore \$85 form part of the GDP according the expenditure approach. Second, we can obtain the same contribution to GDP as the sum of values added in all stages of production as shown in col.(3). Here there is no need to agonize over which stage of production is the final stage. Third, the total value added (\$85) can also be calculated as the difference between col.(1) total and col.(2) total. The former represents total receipts from all stages of production; the latter total costs of intermediate goods used in all stages of production. And by definition, the difference is total value added.

Questions for Review

Short Questions

- 1. Explain the difference between government spending and government purchases of goods and services. Which is likely to be larger?
- 2. Distinguish between gross and net investment. Why is the concept of net investment important in the context of productive capacity of a country?
- 3. Why is saving treated as a leakage from circular flow, while investment as an injection into it?
- 4. What are direct and indirect taxes?
- 5. Explain what types of investment are excluded from 'gross private domestic' investment.
- 6. Assume that value of exports is zero, while that of imports is positive. If you add the value of imports to the usual C+I+G total, would you overestimate the GDP? Why?
- 7. "If the value added method is applied to compute GDP, it is unnecessary to distinguish between intermediate and final goods". Refute or justify.

Broad Ouestions

- 1. Explain how the circular flow scheme can throw light on the possibility of computing GDP in alternative ways.
- 2. Why should the GDP calculated as sum of flows of expenditurs on final goods and services be equal, in principle, to the sum of earnings properly defined? Explain.
- 3. "The value added approach to GDP essentially boils down to the income approach". Do you agree? Give reasons.

Lesson 4: Measures of Aggregate Income, and GDP as an Index of Economics Welfare

After studying this lesson, you will be able to

- > see how aggregate income- measures like Disposable Income and Disposable Personal Income are derived from aggregate output measures like GDP and NDP
- > understand why these measures are necessary
- > know why GDP is a poor index of a country's welfare level
- > see how a suitably modified measure could serve as a better indicator
- realize why international comparison of GDP per capita could be quite misleading.

Measures of Aggregate Income, and GDP as an Index of Economic Welfare

GDP accounts are useful in themselves; but they are also useful because they allow us to derive other measures which are needed to understand the behaviour of consumers and businesses. GDP and NDP (=GDP - Depreciation) are two principal measures of an economy's output. National Income (NI) is a third measure. NDP and NI, it may be emphasized, both measure the *same* amount of goods; but they value these goods differently. The NDP values output at market prices which include indirect taxes (e.g. sales taxes). National Income (NI), on the other hand, values the same output at factor costs. Factor costs represent factor incomes earned, though not necessarily received, by the factors of production. Factor costs are obtained as the sum of wages, interest, rents and profits. Therefore, NDP will exceed NI by approximately the amount of indirect taxes. We can thus write the following relationships:

GNP = GDP + Net factor incomes form abroad(1)
NNP = GNP - depreciation(2	2)
NI = NNP - Indirect Taxes	3)

Apart from NI, two other important measures are Personal Income (PI) and Disposable Personal Income (DPI). PI is current income of persons form all sources. Some of it has no relation to current production. Examples are all types of transfer payments in exchange for which no service is performed or no goods offered. PI, therefore, is *not*a measure of output in the sense GDP, NDP and NI are. DPI is derived form PI by deducting the amount taken away by government as personal income taxes. DPI is the income (from all sources) available to people to dispose of as they please.

A component of NI is profits of corporation and unincorporated enterprises. A part of these profits is taken away by the government as profit taxes, a part as payroll taxes etc. Another part is held by the firms to build up internal funds for business expansion. These undistributed profits are known as retained earnings. As a result, the national income *earned* falls short of national income *received* by people. As offsets there are all kinds of transfer payments received by households. By taking account of these deductions and additions, we can write

Finally, after deduction of personal taxes from DI, we get DPI as

The relationship between various measures indicated by (1), (2), (3) and (4) can be shown pictorially as in Fig. 2-2, Representative numbers in keeping with the pictorial relationships are presented in Table 2-6.

Fig. 2-2: Relationship among defferent measures of output and income

NX	NF (-)					
		Dep		ТР	RE	
G			IBT	TP (+)	(-)	
I						PT
С	GNP	NNP	NI	NI	DI	DPI
GDP	GNP	NNP	NI		DI	DPI

Notes: NX = net exports = X - M

NF = net factor income form abroad

Dep= depreciation

IBT= indirect business taxes

TP = transfer payments

RE = retained earnings, corporate taxes, payroll taxes etc.

PT = personal taxes

Table 2-6: GDP and Disposable Personal Income, 1991 (Billions of US\$)

Gross Domestic Product (GDP)		5,677.5
Plus Net factor incomes		
from abroad	17.5	
Equals Gross National Product (GNP)		5,694.9
Less Depreciation	626.1	
Equals Net National Product (NNP)		5,068.8
Less Indirect taxes	524.6	
Equals National Income (NI)		4,544.0
Less Corporate profits taxes,		
Retained earnings,		
Payroll taxes etc	8,75.1	
Plus Transfer Payments & Others	1,159.2	
Equal Personal Income (PI)		4,828.3
Less Personal taxes	6,18.7	
Equals Disposable Personal Income		4,209.6

Beyond GDP to Net Economic Welfare (NEW)

When the system of National Income and Product Accounts were set up, the GDP was intended only as a measure of output, not as a measure of welfare. Later, a welfare implication came to be attached to GDP: it measures not only the level of output of a country, but also its level of welfare. However, protests have been voiced from time to time against this later interpretation. One can claim that more GDP means more goods and services available for present and future consumption, and hence more material welfare. Few will quarrel with this. Many would, however, like to point out that the way goods and services are defined (and measured) for national income accounting purposes may not exactly correspond with how they should be defined for welfare purposes. Therefore, several attempts have been made to correct for this deficiency. One of the earliest attempt in this direction is knows as Net Economic Welfare (NEW). It tries to adjust the conventionally measured GDP figures by including only consumption and investment items which directly contribute to people's economic well-being. Let us see briefly where and why these adjustments are called for.

When GDP Understates Well-being

Leisure: Perhaps you will readily agree that the leisure you enjoy (unless, of course, you have too much of it) adds to your well-being. So it is for many. This is, however, one of the several things which have no place in GDP as conventionally compiled. This problem is especially acute for high-income societies. As people become more and more affluent, they work fewer hours, deriving satisfaction from leisure in the same way as they desire satisfaction from goods and services. The exclusion of leisure from GDP accounting systematically understates the level of well-being.

Market Activities Only: As stated earlier, the GDP tries to capture the market value of goods and services; but there are many activities which undoubtedly contribute to well-being, but are usually excluded from GDP for lack of market prices (because they are not traded in organized markets). Examples are services of housewives, do-it-yourself repairs and maintenance, educating own children and so on. More important perhaps in quantitative terms, at least for some economies, are the activities curried out by the vast underground economy. These activities include working at a second job for cash, illegal gambling, drug dealing, work done by illegal immigrants, bartering of services and so on. Activities of this kind go unreported for at least two reasons. First, some of them are illegal (such as drug dealing) and so will invite punishment if reported or detected. Secondly, some though not illegal are not reported in order to avoid payment of taxes or escape government regulations (e.g. working for tips). Some of these underground activities do increase national welfare (e.g. services provided by illegal aliens), while others may do the opposite (e.g. the services of a hired killer). To the extent that welfare increasing activities are excluded from GDP calculations, welfare significance of measured GDP has a downward bias, and this ought to be removed to obtain a better index of welfare.

GDP may also Overstate National Welfare

There are also reasons why the GDP may have a built-in upward bias as a measure of welfare.

Inclusion of "Bads" (as well as 'Goods')

Some of the 'bads' (e.g. cocaine production) of the underground economy may be excluded, but the 'bads' of the overground economy easily find their way into GDP. Take the case of a natural disaster like the earthquake. Few will dispute the fact that national welfare declines as results. Many homes and businesses are destroyed and many people may get killed. But the irony is that in the period of reconstruction, the GDP can show a marked increase. Why? Consumer spending will go up, for example, when clean up operations are undertaken, or when lost household possessions are replaced. Rebuilding of homes, businesses, schools, hospitals and bridges will increase investment expenditures. Additional government spending for relief and rehabilitation

will tend to raise GDP. All this may give the wrong impression that the country is better of as a result of the earthquake. A more dramatic example will be the case of a war. War expenditures give a tremendous boost to the current GDP. But there is no doubt that the country is worse off because of the destruction of properties and human lives. Unfortunately this fact cannot be reflected in the usual GDP numbers.

Ecological Costs are Ignored

This is a case in which bad are included, despite the fact that they reduce welfare. A modern industrial society produces many goods and services which may directly increase welfare, but indirectly may harm the society. Obviously, we are talking about the ecological damages caused by many activities. Automobiles provide comfortable transport, but also put noxious gases into the atmosphere. Factories produce may valuable goods; but they also pollute rivers by releasing harmful chemicals into them. These are the so-called collateral damages are called negative externalities by economists. These costs should be netted out of the GDP as usually measured to get a better index of national welfare.

In conclusion, we must recognize that despite its many limitations, the GDP per capita remain the best available single measure of a country's progress. It may be supplemented by a series of social indicators like life expectancy, infant mortality rates, availability of health care, the air and water quality, degree of urban crowding and so on. It's almost impossible to obtain a single ideal summary measure of economic welfare. Therefore, economists and policy makers go on relying on GDP with all its defects (at least it has a rather more precise meaning than many of the alternatives proposed to take its place).

Finally, a word of caution on international comparison of GDP per capita. This comparison has less precise meaning than that for a single country over time. For one thing, treatment of different items both with respect to valuation or inclusion may vary across countries. What is treated as part of GDP in one country may not also be treated in another, or if the treatment is the same, the basis of their valuation may be different. But most serious problem arises when we compare GDP per capita between rich and poorer countries. An American may easily be puzzled by the fact that his African counterpart can survive with an income of a few hundred dollars a year. No doubt the African is much poorer than his American counterpart. But it is only a minor part of the story. More important is the fact that a vast majority of goods and services do not pass through markets in African or other less developed countries. As a result, the GDP per capita gives a misleading picture of how well-off an African, for example, is relative to his American counterpart.

Questions for Review

Short Questions

- 1. Define National Income, Disposable Income, and Disposable Personal Income. Explain their relationships.
- 2. "National Income and Net National Product are both measures of the same output but based on different valuations". Explain.
- 3. "While National Income is a measure of output, Disposable Income is not, strictly speaking". Do you agree? Explain.
- 4. "GDP includes as well as excludes activities which have implications for national welfare". Elaborate.
- 5. It is suggested that GDP should be supplemented by a number of social indicators like life expectancy, literacy etc. In what context is the suggestion relevant?
- 6. "If GDP per head in a poor country (P) is half that in a rich country (R), then we can assert that a person in R is twice as well-off as one in P". Is the statement valid? Explain.

Broad Questions:

- 1. Discuss briefly how supplementary measures of aggregate output and aggregate income can be derived from GDP. Why are they useful?
- 2. "Whatever the merits of the GDP as a measure of aggregate output, it has glaring defects as an index of national welfare". Comment.

Unit Highlights

- CONCEPT OF AGGREGATE DEMAND AND AGGREGATE SUPPLY
- CONSUMER SPENDING AND INCOME ARE CLOSELY RELATED
- > MODERN THEORIES OF CONSUMER BEHAVIOR: THE LIFE-CYCLE AND PERMANENT INCOME HYPOTHESES
- ➤ NON-INCOME DETERMINANTS OF CONSUMPTION

Technologies Used for Content Delivery

- **❖** BOUTUBE
- ❖ BOU LMS
- **❖** WebTV
- Web Radio
- Mobile Technology with MicroSD Card
- ❖ LP+ Office 365
- **❖** BTV Program
- Bangladesh Betar Program

Lesson-1: Concept of Aggregate Demand and Aggregate Supply

Aggregate Demand & Aggregate Supply Framework:

After completion of this lesson you will be able to –

- ➤ Define and explainAggregate Demand (AD) and Aggregate Supply (AS) and identify their main components and determinants.
- Interpret the AD and AS curves by understanding their shapes, slopes, and the reasons behind these characteristics.
- Analyze shifts in the AD and AS curves by identifying key factors and events that cause these shifts, and predict their effects on the economy.
- ➤ Differentiate between short-run and long-run aggregate supply and understand the significance of the Long-Run Aggregate Supply (LRAS) curve in representing potential output.
- Explain economic equilibrium in the AD-AS model and distinguish between short-run and long-run equilibrium, including how adjustments lead to full employment in the long run.
- Evaluate the effects of fiscal and monetary policy on the AD-AS model, understanding how expansionary and contractionary policies influence economic output, price levels, and employment.
- Analyze the impact of economic shocks on the AD-AS model and assess how positive and negative demand and supply shocks influence national output, price levels, and overall economic stability.

Aggregate Demand (AD)

Aggregate Demand represents the total amount of goods and services demanded in an economy at different price levels over a specified period. AD is expressed by the equation:

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

where:

- **C** = Consumption expenditure by households,
- **I** = Investment expenditure by businesses,
- **G** = Government spending, and
- **(X M)** = Net exports (Exports Imports).

Each component has distinct influences and responds differently to changes in the economic environment, making AD a dynamic and multifaceted concept.

Components of Aggregate Demand

1. Consumption (C):

Consumption is the largest component of AD, accounting for household spending on goods and services. It is influenced by factors such as:

- o **Income levels:** Higher disposable income leads to greater consumption.
- Wealth effect: Increases in household wealth, such as rising stock or property values, can increase spending.
- o **Interest rates:** Lower interest rates reduce the cost of borrowing, encouraging spending on credit.
- Consumer confidence: Positive economic outlook and job security boost consumer spending.

2. Investment (I):

Investment refers to business spending on capital goods and infrastructure. Key drivers of investment include:

- o Interest rates: Lower rates reduce borrowing costs, encouraging business investments.
- o **Business expectations:** Optimism about future economic growth drives more investments.
- o **Technological advancements:** New technology can stimulate investment in upgrades.
- o Government incentives: Tax breaks or subsidies can stimulate business investment.

3. Government Spending (G):

Government spending includes expenditures on public services, defense, infrastructure, and social programs. Fiscal policy decisions significantly impact government spending, affecting AD directly.

4. Net Exports (X - M):

Net exports represent the balance between a nation's exports and imports. This component is influenced by:

- Exchange rates: A weaker domestic currency makes exports cheaper and imports more expensive.
- o Global economic conditions: Foreign demand increases when other economies grow.
- o **Trade policies:** Tariffs, trade agreements, and restrictions impact exports and imports.

The Aggregate Demand Curve

The Aggregate Demand curve slopes downward, showing an inverse relationship between price levels and the quantity of output demanded.

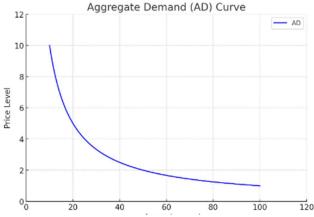


Figure: Downward sloping Aggregate Demand Curve

Three primary reasons explain the downward slope of the AD curve:

1. Wealth Effect:

As price levels fall, the real purchasing power of money increases, allowing consumers to buy more, leading to increased demand.

2. Interest Rate Effect:

Lower price levels reduce the demand for money, lowering interest rates. Lower interest rates reduce the cost of borrowing, encouraging investment and consumption.

3. Foreign Exchange Effect:

When a country's price level falls relative to other countries, its goods become cheaper, boosting exports and reducing imports, thus increasing net exports.

Shifts in Aggregate Demand

Changes in AD are represented by shifts in the AD curve. These shifts can occur due to changes in any of the components of AD:

• Rightward Shift (Increase in AD):

• AD increases due to factors like lower interest rates, higher consumer confidence, increased government spending, or a rise in exports. This shift can lead to higher output and potentially inflation in the short run.

• Leftward Shift (Decrease in AD):

• AD decreases due to higher taxes, reduced government spending, higher interest rates, or declining exports, often leading to lower output and possibly deflationary pressures.

Aggregate Supply (AS)

Aggregate Supply represents the total quantity of goods and services that producers in an economy are willing and able to supply at different price levels.

Short-Run Aggregate Supply (SRAS)

The Short-Run Aggregate Supply (SRAS) curve slopes upward, reflecting that in the short run, as prices rise, firms are willing to increase production due to higher potential profits.

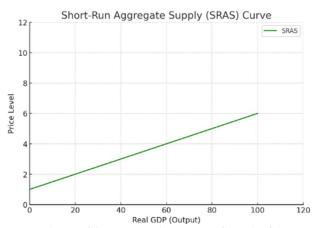


Figure:Short-Run Aggregate Supply Curve

Determinants of SRAS include:

- **Input Prices:** A rise in wages or raw material costs increases production costs, shifting SRAS left.
- **Productivity:** Increases in labor productivity can shift SRAS rightward, as firms produce more at each price level.
- Government Policies: Taxes, subsidies, and regulations affect production costs and incentives.
- **Supply Shocks:** Natural disasters, pandemics, or sudden changes in oil prices can disrupt production, shifting SRAS.

Long-Run Aggregate Supply (LRAS)

The Long-Run Aggregate Supply (LRAS) curve is vertical, showing that in the long run, the economy's output is determined by factors such as technology, resources, and labor rather than price levels.

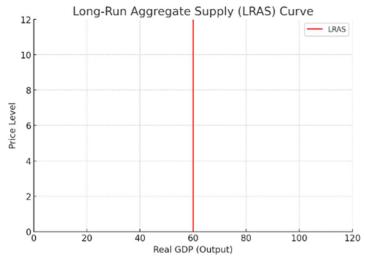


Figure:Long-run Aggregate Supply (LRAS) Curve

Determinants of LRAS include:

- Labor Force Size: More workers increase potential output.
- Capital Stock: Investment in infrastructure, factories, and equipment raises productive capacity.
- **Technology:** Advances in technology enhance productivity, shifting LRAS rightward.
- Resource Availability: Access to natural resources supports higher output.

Equilibrium in the AD-AS Model

Short-Run Equilibrium:

The economy reaches short-run equilibrium where the AD curve intersects the SRAS curve. At this point, the quantity of output demanded matches the quantity supplied, determining short-run output and price levels.

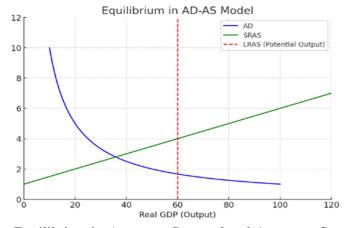


Figure: Equilibrium in Aggregate Demand and Aggregate Supply Curve

- **Increase in AD:** When AD shifts right, both output and price levels rise, potentially causing inflation if the economy is near full employment.
- **Decrease in AD:** When AD shifts left, output and price levels fall, potentially leading to unemployment and recession.

Long-Run Equilibrium:

In the long run, the economy adjusts to a point where AD intersects LRAS, representing full employment and potential output.

Policy Implications of the AD-AS Model

Fiscal Policy

Governments use fiscal policy to influence AD by altering consumption, investment, and government spending.

- Expansionary Fiscal Policy: Increasing government spending or cutting taxes raises AD, stimulating economic growth and reducing unemployment.
- Contractionary Fiscal Policy: Decreasing government spending or raising taxes reduces AD, which can help control inflation.

Monetary Policy

Central banks adjust the money supply and interest rates to influence AD. Lower interest rates encourage borrowing, raising AD, while higher rates restrict borrowing, reducing AD.

Economic Shocks and the AD-AS Model

Demand Shocks:

Sudden changes in AD components can shift the AD curve and impact output and prices.

- **Positive Demand Shock:** Raises AD, increasing output and prices, often leading to inflation.
- Negative Demand Shock: Lowers AD, reducing output and possibly causing deflation.

Supply Shocks:

Unexpected events such as natural disasters, oil price spikes, or technological changes can shift the AS curve.

- Positive Supply Shock: Shifts AS rightward, raising output and lowering prices.
- **Negative Supply Shock:** Shifts AS leftward, reducing output and increasing prices, which may lead to stagflation.

Short Questions

- 1. Define Aggregate Demand (AD) and list its components.
- 2. Explain the Interest Rate Effect and its role in the AD curve.
- 3. Describe the main differences between Short-Run Aggregate Supply (SRAS) and Long-Run Aggregate Supply (LRAS).
- 4. How does an increase in government spending affect the AD curve?
- 5. Why is the Long-Run Aggregate Supply (LRAS) curve vertical?

Broad Questions

- 1. Discuss the factors that can cause shifts in the Aggregate Demand (AD) curve, giving examples of events or policies that could lead to these shifts.
- 2. Describe how the AD-AS model can be used to analyze the effects of expansionary and contractionary fiscal policy on the economy.
- 3. Explain the concept of economic equilibrium in the AD-AS model. How does short-run equilibrium differ from long-run equilibrium, and what adjustments lead the economy from one to the other?
- 4. Examine the impact of a negative supply shock (such as an oil price hike) on the AD-AS model. What are the likely outcomes for output, prices, and employment?
- 5. Analyze the policy options available to the government or central bank in response to a decrease in Aggregate Demand, and explain how each option would impact the AD-AS model.
- 6. Explain why the AD-AS framework may be called a unifying framework for varying approaches to macroeconomic analysis and policy.
- 7. Briefly explain why the shape and position of the aggregate supply curve is crucial for fighting unemployment with demand management tools.

Lesson 2: Consumer spending and Income are closely related

After studying this lesson, you will be able to

- > see why understanding consumer behavior is important for shortrun stabilization as well as for long run growth.
- > understand why high-income families on the average save more than low-income families.
- > see what MPC and MPS measure and how they are related to each other.
- interpret the saving function in relation to the consumption function.

Lesson 1: Consumer Spending and Income are closely related

Macroeconomics is a policy science. One kind of policy has to do with short-run stabilization i.e. to keep the national output and employment as close as possible to their potential levels. The system of national income accounts provides us with the data necessary to see whether and how far the national product has deviated from the potential (full employment) output in particular years. Having seen what has happened, the task of theory is to provide an explanation so that appropriate policies may be initiated wherever necessary. Where to look for an explanation? The natural starting point would be to look at the GDP identity from the expenditure side.

$$GDP = C + I + G + NX$$

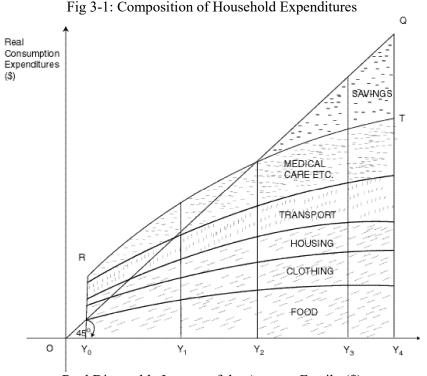
There are four component on the right-hand side of the above identity, representing together the aggregated demand for GDP produced in a given period. Now it is easy to imagine that change in aggregate demand will definitely have something to do with changes in output and employment. If we want to understand why the GDP tends to fluctuate about its potential level, we must analyze the behavior of consumers (for c), investors (for I), government (for G) and foreigners (for NX). Of these four, the consumers behavior is by far the most important, because consumption spending accounts for a very sizeable proportion of total expenditures (about 66% for US in the 1990's).

Studying consumer behavior is also important from the longrun macroeconomic perspective. As we know already, in the long run, the macroeconomic concern is that of achieving decent rates of economic growth to ensure rising standards of living. The long run growth prospects fundamentally depend on how the current national output is devided between consumption and investment. Countries (like Japan, Korea, Honkong) which save and invest a larger proportion of current output have achieve higher rate of growth than those (like USA and UK) which save and invest a smaller proportion of their current output.

Income and consumption at the household level

What factors determine the level of consumer spending? There is a close and powerful relationship between aggregate real consumption and aggregate real disposable income. To understand why it is useful to look at the question at the micro-level to start with. We want to know how households on the average respond to changes in their disposable incomes. Without much risk of error, we can assert that no two families spend their disposable incomes in exactly the same way. Family budget studies, however, suggest a remarkably stable pattern in the allocation of family expenditures among food, clothing and other major items. A picture of this pattern is provided in Fig. 3-1. Two things may be noted about the income consumption relationship.

The first relates to the proportion of income spent on basic necessities. This declines progressively as average household income goes up. The other is the behavior of savings as incomes vary. To continue with the first, we see that low-income families limit their spending mostly to necessities of life- food, clothing and shelter. Despite this, the incomes of the poorer families often are not.



Real Disposable Income of the Average Family (\$)

sufficient to make the necessary purchases. For instance, families with an average income of less than Y₂ spend more than their incomes. This can be measured by the vertical distance between the total consumption line RT and the 45 line OQ (also called the zero saving line for obvious reasons). Living beyond current income is made possible by borrowing, or drawing on past savings, especially by poor, older people who tend to sell-off their assets accumulated during their working lives to finance consumption in the old age.

As the average family income rises, the amount of dissavings declines. The break-even point comes at an income of Y2. Beyond this income level, families spend less their incomes and build up savings. This kind of relationship-lower-income people dissaving and higher income people saving; the proportion of income devoted to basic necessities declining as income goes up - is something we expect from microeconomic theory where the relationship is know as the Engel curve. It shows how expenditure on a good changes as income rises, but the price remains unchanged. The RT curve in Fig 3-1 is nothing but this relationship obtained from family budget studies which can observe household consumption at a point in time when most people face the same price.

Income and Consumption at National level

In the previous section, we have been talking about consumption behaviour of average families at different levels of income. We must now address the relationship at the aggregate level for the country as a whole. The relationship that we have found to be true at the family level can be aggregated to yield a similar relationship at the macro level under certain simplifying assumptions. But we will not pursue this methodological point here.

J.M. keynes put a great deal of emphasis on the relationship between aggregate real consumption and aggregate real disposable income in his theory of employment and output. He posited that consumption expenditures vary directly with disposable income. This relationship is known as the Consumption Function. It shows how aggregate real consumption varies as aggregate real

disposable income varies, other things remaining constant. The mere assertion that such a relationship exists is not very helpful. More should be, and has been, said about the relationship. For this, we have first to define two characteristics of the relationship.

1. The Marginal Propensity to Consume (MPC)

It is defined as the ratio of change in consumption to the change in income which caused it. Symbolically, it can be expressed as

$$MPC = \frac{\Delta C}{\Delta Y_d}$$

where ΔC denotes change in real consumption and ΔY change in real disposable income. For example, if MPC = 0.8, we can say that the consumers spend 80% of their additional income for consumption. Since the relationship between C and Y_d is assumed to be direct, ΔC and ΔY_d both move in the same direction (rising or falling together). Therefore, the marginal propensity to consume, showing the proportion of additional income spent for consumption, is positive.

2. The Average Propensity to Consume (APC)

It is the ratio of real consumption (C) at a given level of real disposable income (Yd) to that income level. In symbols,

$$APC = \frac{C}{\Delta Y_d}$$

From APC we know what percentage of the real disposable income is spent for consumption, for example, if APC = 0.70 we can say that 70% of the income is devoted to consumption.

With respect to these two characteristics, the followings points have often been asserted, especially by Keynes:

- a) The marginal propensity to consume (MPC) is positive but less than unity (ie o<MPC<1)
- b) The MPC is less than APC, implying that APC declines as income rises.

These two features of the consumption function have been illustrated with hypothetical figures given in Table 3-1. The relationship can be expressed algebraically as

$$C = 100 + 0.8 Yd$$

For the data given in Table 3-1, the MPC is positive but less than unity (= 0.8) and has been assumed constant at all income levels. The APC declines as income rises. Also the MPC < APC at all income levels.

Table 3-1: Consumption-Income and Savings-Income

Relationship (Constant Prices; billions of dollars)

	relationship (constant i frees, officers of donars)				
Income	Consumpti	MPC	APC=C/	Saving	MPS
(Y_d)	on	$=\Delta C/\Delta Y_d$	Y_d	$S=Y_d-C$	ΔS
	(C)	а			$=\frac{1}{\Delta Y_d} = 1-MPC$
					d d
500	500-		1.00	0 —	
		${0.8}$			\longrightarrow 0.2
600	580		0.97	20	
		0.8			0.2
700	660		0.94	40	
		>>0.8			\bigcirc 0.2
800	740		0.93	$60 \leq$	
		0.8		_	0.2
900	820		0.91	80	
		0.8			0.2
1000	900		0.90	100	
		0.8			0.2
1100	980		0.98	120	

From the algebraic relationship $C = 100 + 0.8 \text{ Y}_d$, the MPC can be read off as the co-efficient of Y_d . The same is not true of APC. For APC we can write

$$\frac{C}{Y_{d}} = \frac{100}{Y_{d}} + \frac{0.8Y}{Y_{d}}$$
or, APC = 0.8 + $\frac{100}{Y_{d}}$

which shows that APC declines as Y_d rises, as we should expect. It also shows that for $Y_d > 0$, MPC(=0.8) is less than APC.

Income - Consumption Relationship Graphically

A graphical representation of the consumption income relationship typical of the one shown in Table 3-1 is given in Fig 3-1(a). As drawn, the slope of the consumption function is positive, but less than one. We know this from the fact that the consumption function KM has a positive vertical intercept of OK (=100). The slope measures the marginal propensity to consume (MPC), while the intercept shows what is known as autonomous consumption.

The reason for calling it autonomous is that this component of total consumption has nothing to do with income. When Yd = o, c = OK = 100. This amounts to the dissaving by the nation as a whole. Geometrically, the APC can be calculated easily. Take any point such as G on the consumption function and join it to the origin O. The slope of line OG is GY_0/OY_0 which is nothing but APC by definition (at income level, Yo). In this way, we can calculate APC geometrically for any level of income. At income level Yo, APC = 1 (become OYo = GYo). A little reflection will show that as income rises above Yo, APC declines, while as income falls from Yo, APC rises. But overall,

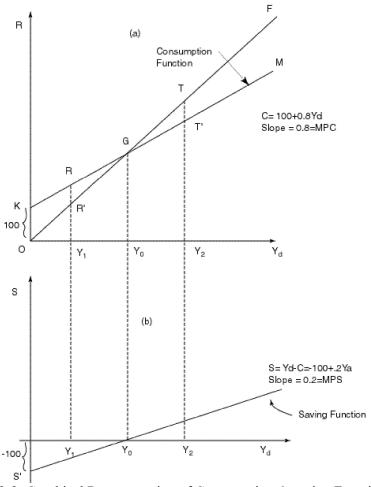


Fig 3-2: Graphical Representation of Consumption & saving Functions

Note: Yd = Real Disposable Income

C = Real Consumption

S = Real Savingit remains true that APC declines with rising income.

The 45° line (or the zero - saving line) in Fig 3-(a) helps us to read off the amount of saving at each level of income visually. For example, by construction $OY_2 = T'Y_2$, and consumption at income OY_2 is $T'Y_2$. Therefore, saving at this level of income is $OY_2 - T'Y_2 = TY_2 - T'Y_2 = TT'$, which we can see straightway from the diagram. The consumption line KM intersects the 45° line (OF) at point G. This implies that at income Y_0 , $Y_d = C$, so that saving (S) is zero, To the left of G, the consumption line is above the zero saving line (OF) and, therefore, the saving is negative. To the right of G, the consumption line is below OF, implying positive savings. Or, stated differently, for $Y > Y_0$, S is positive, for $Y = Y_0$, S = O and for $Y < Y_0$, S is negative.

The Saving Function

By definition, saving equals income minus consumption (as shown in Table 3-1). Consumption depends on income; saving is whatever is left of income after consumption. Thus saving is also a function of income. Obviously, the two functions are not independent because

$$Y = C + S$$

where S = saving out of Y. Two features of the saving function may be noted. **First**, it is an increasing function of income: at higher incomes more savings will be forthcoming. **Second**, its slope, representing the marginal propensity to save (MPS), is positive and less than unity. The

slope of the consumption function (MPC) and the slope of the saving function (MPS) are clearly related.

Since any increase (or decrease) in income can be used for consumption and saving, we have

or,
$$\frac{\Delta Y}{\Delta Y} = \frac{\Delta C}{\Delta Y} + \frac{\Delta S}{\Delta Y}$$
or,
$$\frac{\Delta C}{\Delta Y} + \frac{\Delta S}{\Delta Y} = 1$$
or,
$$\frac{\Delta C}{\Delta Y} + \frac{\Delta S}{\Delta Y} = 1$$
or,
$$\frac{MPC + MPS = 1}{MPS = 1 - MPC}$$

In Fig 3-2(b) the saving function (SS') corresponds to the consumption function KM in Fig 3-2 (a). The slope of the saving function is 0.2 because the slope of the saving function is 0.8. As we have seen earlier, if

$$Y_d > Y_o$$
, $S > O$
 $Y_d = Y_o$, $S = O$
 $Y_d < Y_o$, $S < O$

When these features incorporated, the saving function must cross the horizontal axis (Y_d) at $Y_d = Y_0$, lie above it for $Y_d > Y_0$, and below it for $Y_d < Y_0$.

Questions for review

Short Questions

- 1. Define MPC and APC. If the consumption function can be written as C = Co + c Yd, where Co>o and o<c<1, how is APC related to MPC?
- 2. Define MPS, what does it measure? How is it related to MPC?
- 3. What is autonomous consumption? Why is it positive?
- 4. What happens to the consumption function if MPC rises at all income levels, but the autonomous consumption is unchanged. Use diagram for your answer.
- 5. With respect to question No. 4 above, how is the slope of the saving function affected? Use diagram for your answer.
- 6. Explain the meaning of consumption function and the basic ideas underlying its formulation. E. Explain how the consumption and saving functions are interrelated.

Questions

- 1. Explain why understanding the determinants of consumer spending is important for shortrun as well as long run macroeconomic policy.
- 2. What kind of income consumption relationship have the family budget studies discovered? Explain.
- 3. Why is aggregate real disposable income singled out as a primary determinant of aggregate real consumption? Discuss.

Lesson 3: Modern Theories of Consumer Behavior: The Life-Cycle and Permanent Income Hypotheses

After studying this lesson, you will be able to

- > See what empirical evidence says about the form of the consumption function;
- ➤ Understand why current income is not a very good determinant of consumption;
- > appreciate why wealth can have an independent influence on consumption
- ➤ Understand how the modern theories have managed to reconcile the apparently contradictory empirical findings.

Modern Theories of Consumer Behavior: The Life-Cycle and Permanent Income Hypotheses

Introduction

The theory of consumption function presented in Lesson 1 of this unit is basically Keynesian in content and flavour. The assertion that MPC is positive and less than unity, while MPC < APC seem intuitively plausible. However, no convincing evidence was advanced in support of these conclusions. Keynes referred to bits and pieces of statistical evidence in his discussion of the consumption function. Never the less his hypothesis is mostly based on what he called "fundamental psychological law".

He was shaky even on this ground. He failed to provide detailed a priori arguments which would lead logically to the income- consumption relationship that he postulated. You may recall the budget studies referred to in Lesson 1, which tend to give support to the Keynesian position. But these studies can hardly provide any strong evidence. There are serious methodological problems of transferring the relationship based on household studies to a relationship that could be said to be valid at the aggregate level.

Later, especially in the post war period, attempts have been made to carefully estimate the income consumption relationship empirically from aggregate time series data. The results have puzzled the economists, because they were apparently contradictory. One type of evidence suggests that the relationship is non-proportional (MPC<APC), as Keynes suggested. This evidence is based on short time series data. The second type of evidence provided by Simon Kuznets on the basis of long time series data shows that the relationship is proportional (MPC = APC). The challenge before theorists is to reconcile the apparently contradictory findings: why does the relationship appear to be non-proportional in the short run? Why is it proportional in the long run? Is one type of relationship correct while the other is wrong? Modern theories of consumption-the Life Cycle Theory and the Permanent Income Theory are attempts at this reconciliation. The key point here is that wealth and permanent income play their roles in influencing consumption behaviour in addition to current income.

The Life Cycle Theory of Consumption and Saving

The Keynesian (or Keynesian type) consumption function is based on the idea that consumption in a period is related to income of that period. The life cycle theory (LCT) take a different view. It assumes that a consumer takes into account his lifetime income to smooth out the consumption flow over the life time. This means that he will save during his working life so that he can use his savings to finance consumption when his income are low or none-existent (as when he is out of work, or in retirement). The consumption function based on LCT is of the form

$$C = a' W_r + b' Y_L....(1)$$

where W_r = real wealth of the consumers

 $Y_L = consumers labour income$

a' = Marginal propensity to consume out of wealth

b' = Marginal propensity to consume out of labour income.

To see how the relationship (1) is arrived at, we make a few assumptions about a typical consumer. He expects to live for t^* years. His earning life consists of t_i years during which he expects to earn Y_L per years. He begins planning his consumption from the year he starts working. In that sense, year 1 is his first year of work. He will then spend (t^* -ti) years in retirement. Our individual now faces the following questions:

- (a) What are the lifetime consumption possibilities?
- (b) How to distribute total income smoothly for consumption over the life time?

To answer question (a), let us assume initially that he has no income from assets (ie his entire income is labor income). Then his lifetime income is $Y_L t_i$ (annual income times the number of working years). This implies that his lifetime (total) consumption cannot exceed $Y_L t_i$. As for question (b), assume for simplicity that the consumer wants to spend at a constant rate, C, annually during his lifetime.

His lifetime consumption is, on this assumption, \hat{C} t* (annual consumption times the number of years he expects to live from the year he started working). Now assuming that he has no beguest to augment his labour income, we can wite his life time budget constraint as

(life time consumption = lifetime labour income)

During through by t^* , we can write (2) as

This says that the planned per period consumption (c) is proportional to labour income per period, the constant of proportionality being the fraction of lifetime spent to earn income (ti/t*).

The Saving Function

We can now easily deduce the saving function, using (3). Since saving is income minus consumption in any period, we have, writing S for saving per period,

S= Y_L -
$$\hat{C}$$
 = Y_L - $(\frac{t_i}{t^*})$ Y_L
or, S = Y_L $(1-\frac{t_i}{t^*}) = (\frac{t^*-t_i}{t^*})$ Y_L.....(4)

Equation (4) says that during the working life of the individual, his saving is equal to a constant fraction $(1-\frac{ti}{t^*})$ of his annual income.

Influence of Wealth on Consumption

It is now easy to introduce the effect of wealth into the consumer's consumption function. Suppose that our individual is in his q-thyear of working life and has a stock of inherited real wealth worth $W_{\rm r}$. He begins his lifetime consumption planning in the q-th year. His labour income for the remaining years of his working life is $(\text{ti-q})Y_{\rm L}$. If we add this to his inherited

wealth (W_r) , his total resources to be spent on consumption amounts to (ti-q) $Y_L + W_r$, which he will spend in (t^*-q) year (he leaves no bequest). Thus his lifetime budget constraint can be expressed as

which is identical with (3), noted above. In (5),

$$a' = \frac{1}{t^*-q}$$
 = marginal propensity to consume out of wealth, and

$$b' = \frac{ti-q}{t^*-q}$$
 = marginal propensity to consume out of labour income.

To gain a better understanding of what (3) and (5) imply let us work with some illustrative members. Assume that an individual expects to live for 75 years ($t^* = 75$) and that his working life lasts for 40 years (= t_i). If his annuallabour income is \$30,000, his total lifetime income will be (\$30,000 × 40=) \$1,2,00,000 (= Mti) which he will consume uniformly in 75 (= t^*) years.

This makes his annual consumption (\hat{C}) equal to (\$1,200,000 \div 75+) \$16,000.

Now suppose that he in the 15th year of his working life (i.e. he has still 25 years of working life left) with a real wealth of \$ 300,000. His labour income for the remaining 25 years is (\$ 30,000 $\times 25 =$) \$ 750,000. This together with his wealth stands at (\$ 750,000 + \$ 3000,000 =) \$ 1,050,000. This amount he will spend equally in (75 - 15) = 60 years. Therefore, his annual consumption expenditure will be (\$ 1,050,000 $\div 60 =$) \$ 17,500. Notice that due to the dominant effect of wealth, (which is more than his savings for 15 years ie, \$ 210,00, his annual consumption has gone up by (\$ 17,500-\$ 16,000=) \$ 1,500. In this case, the MPC out of wealth a'

$$=\frac{1}{75-15}=0.0167$$
, while the MPC out of labour income, b' $=\frac{40-15}{60}=0.4167$. The consumption

function (5) can be written as $\hat{C} = 0.0167 W_r + 0.4167 Y_L$

$$(17,500) = (5,000) + (12,500)$$

The MPC out of wealth (0.0167) is much smaller than the MPC out of labour income (0.4167). This is what is to be expected. In this respect, wealth's influence on consumption is like that of any transitory component of income. In the example above, suppose that the individual is given a salary raise of \$ 300,000 for one year (his 15th year of service). The MPC out of this temporary raise will be the same as the MPC out of an equal amount of wealth. The reason is that spending out of transitory income, like spending out of wealth, will be spread out over the remaining years of his life.

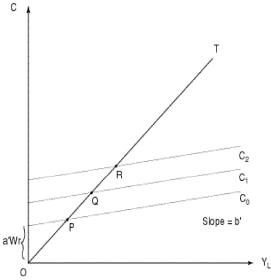


Figure 3.3: Life Cycle Hypothesis

The proportionality non proportionality puzzle referred to at the beginning of this lesson can be explained with the help of the life cycle hypothesis. In Fig 3-3 are shown several short term consumption functions showing the relationship between consumption and labour income. Each is based on relationship of the type shown in equation (5). The slope of C_0 , for example, shows the MPC out of labour income. The intercept, on the other hand, represents the first term of equation (5) i.e, the independent inflence of wealth on consumption. In the short run, the wealth effect is more-or-less constant.

Therefore, whatever change in consumption is observed would be mainly due to changes in labour income. In the short run, MPC<APC. Over time, however, assets will grow, causing upward shifts in the short term consumption functions like C_0 in Fig 3-3. As a result, we expect to observe points like P, Q, R which lies on line OT through the origin. So, even though in the shortrun (i.e over the cycle), we see that MPC < APC, in the long run, we expect to see APC = MPC. Besides the longrun MPC (and APC) is likely to be higher (as can be seen by comparing the slopes of line C_0 and OT). Therefore, the life cycle theory accomplishes the required reconciliation between the two apparently contradictory pieces of evidence, and this is accomplished by emphasizing that consumers behavior is geared to long run consumption opportunities consisting of lifetime income and wealth.

The Permanent Income Theory

This is another attempt at reconciliation. Like the life cycle theory, this theory too argues that consumption is related not to current but to a long-term estimate of income. Milton Mriedman, a Nobel laureate, who originated this theory, call this theory, 'permanent income'. A consumer's current income consist of permanent income (Yp) and a transitory component (Yt). Roughly speaking, the permanent income is what consumers expect to get over a long period of time (e.g. their salaries). On the other hand, the transitory income (which may be positive or negative) may be occasional receipts (tips) or payments (fines for violating traffic rules). Simply stated the permanent income theory states that

$$C_p = bY_p$$

whereCp is permanent consumption (stripped of the element caused by transitory income), and b is the MPC out of permanent income. If we relate consumption to permanent income, a fixed proportional relationship will emerge, irrespective of the distribution of permanent income. But when we relate current consumption to current income, we should expect to get a non-

proportional relationship (MPC < APC). In the case of non-proportional relationship, high-income groups save, while the low-income groups dissave. This is due to the fact that the high income groups, on the overage, tend to have positive transitory income (most of which they save). On the other hand, low-income group's measured income contains negative transitory components;

Therefore, they tend to dissave in order to protect their permanent consumption. This is how the permanent income theory accomplishes the necessary reconciliation between short run non-proportionality and long-term proportionality controversy.

Before we end, we must emphasize that there is a great deal of similarity between the approaches of the life cycle theory and permanent Income theory. Both argue that consumption should be related not to current income but to expected long-term income. However, the life cycle theory pays more attention to the motives of saving, while the permanent Income Theory lays more emphasis on the way consumers form their expectation about their future incomes.

Questions for Review

Short Questions

- 1. What do you mean by proportionality and non-proportionality of income- consumption relationship?
- 2. How does the wealth effect on consumption help explain long-run constancy of the average propensity to consume?
- 3. Give an intuitive interpretation of MPC out of wealth and MPC out of labour income.
- 4. Show that equations (3) and (5) in the text are consistent for an individual who started life with zero wealth and has been saving for 'q' years.
- 5. In terms of Permanent Income Hypothesis, would you consume more of your festival bonus if a) you knew that there was a bonus every year,
 - b) This was the only year your bonuses were given out.

Broad Question

- 1. In what respects is Keynes' consumption theory unsatisfactory? Explain.
- 2. How does the life cycle theory explain long-term proportionality of income consumption relationship?
- 3. The permanent income theory and the life cycle theory are similar in their definition of the appropriate measure of income for explaining consumption." Do you agree? Give reasons for your answer.

Lesson 4: Non-Income Determinants of Consumption

After completion of this lesson you will be able to –

- > see what types of questions are raised in macroeconomics and how they do differ from those of microeconomics;
- > appreciate why macro- and microeconomic approaches are both useful and, in fact, complementary to each other;
- > see what the major macroeconomic policy objectives are;
- > understand why these objectives often conflict, posing difficult choice problem for the policy makers.

Non-Income Determinants of Consumption

Introduction: Aggregate real disposable income is by far the most prominent influence on consumption, though the appropriate notion of income may not, as we have seen, be current income, but rather lifetime income or permanent income. The strength of this relationship seems to depend on the time period for which the relationship is considered. Empirical studies suggest that in quarterly relationships some other factors appear to be more important than in relationships spanning years and decades. On the other hand, some influence, while insignificant in short-run relationship, may acquire significance as long-term determinants. In this Lesson, we try to discover what some of these `other' factors are and how they tend to affect consumption.

Rate of Interest

It stands to common sense to argue that people would like to consume less out of a given income (ie save more) when the rate of interest is high than when it is low. People consume less (and save more) so that for a unit of consumption sacrificed (because of saving) at present he can enjoy more than a unit of consumption in the future. The additional future consumption represents the reward for saving, which is the rate of interest by another name. The higher the reward (i.e; the higher the rate of interest), the argument goes, the higher the saving (the lower the consumption).

Let us examine this plausible- sounding argument a bit more closely. When the interest rate goes up, the typical consumer is subject to two types of influences, technically called substitution effect and income effect. The kind of effect described above is the substitution effect; he substitutes future consumption more for present consumption if the rate of interest is higher than otherwise. This inclines him to save more. The income effect, however, work in the opposite direction. The higher interest rate increases his future income relative to his current income. If he feels richer in the future, he may choose to consume more at present. Which tendency is stronger? If it is the substitution effect, he will save more on balance, as the rate of interest goes up (as we uncritically like to believe).

Think of low-income people who save only a relatively small fraction of income even at high rates of interest. For them, the substitution effect is likely to be stronger, and therefore, their saving can be expected to vary directly with the rate of interest. The same cannot be said of high-income people who save a relatively large fraction of their income. The income effect for them may outweigh the substitution effect, especially at sufficiently high rates. And, in that case, a further rise in interest rate may cause saving to fall (rather than to rise). This is what is known as the backward bending supply curve of saving.

All that we have said so far relates to the behavior of individuals or particular families. What we must know is: what happens on balance when we add up the savings of all people for each rate of interest? Should we expect a direct relationship between aggregate savings and the rate of interest (so that they rise or fall together)? No one really knows, because theory can give no categorical answer. The issue can be settled in particular settings only emperically. And many of the empirical stdies on this issue seem to indicate that the overall impact of interest rate changes on

savings (and hence on consumption) is negligible, which is presumably because offsetting forces-income and substitution effects- really cancel each other out in the aggregation process.

Wealth

How much wealth a consumer has is claimed to have some bearing on his level of consumption (and in a sense distinct from the one implied by the life cycle Hypothesis). Why? The larger the stock of wealth, the lower its marginal utility. Therefore, a consumer with a lot of wealth feels less inclined to add to his future wealth at the cost of current consumption.

In other words, other things constant, the more wealth a person has, the less his desire to accumulate more (and hence the more his desire to consume out of current income). Imagine two friends-Harun and Arun- each with an annual disposable income of \$20,000. They have the same tastes and preference. However, Harun is wealthier with wealth worth \$200,000 than Arun who has a meager & 50,000 worth of assets. If the argument above holds, Harun should save more than Arun, not just because of his being wealthier per se, but also because of his confidence that he can count on his wealth to meet any future contingency, should it arise.

The price level

Part of consumer's wealth is in the form of goods, land, buildings and equities. The prices of all these can be expected to change in line with changes in the general price level (both in direction and magnitude). Therefore, their real value is unaffected by price changes. But there are other types of wealth whose values are fixed in terms of money. Cash, of course, is the most obvious example. But there are others such as government bonds, corporate bonds, and savings accounts. These are all assets with face values fixed in terms of money. A deflation of prices will raise, while inflation will lower, the real value of these assets.

If the price level doubles, a \$ 1000 government bond will buy only half of what it used to buy in terms of goods and services. In other worlds, the real value of the bond has been cut by a half. And with the real purchasing power of the bond eroded, its holder is expected to cut down on his real consumption. The opposite might happen, when the price level rises. In short, higher prices lower consumption by reducing the value of consumers wealth, while lower prices stimulate consumption by raising the value of wealth.

Thus, the price level is yet another variable that can shift the entire consumption function. Higher price leads to lower consumption at any given level of real disposable income. Conversely, a lower price level can cause increased consumption at each level of real disposable income. An important thing should be carefully noted here, because it is often the source of avoidable confusion. When the price level changes, the real disposable income (e. g. for any given normal income) rises or fall's. As a result, real consumption too rises or falls. These effects can be represented by movement along a given consumption function. However, any increase or decrease in real wealth caused by price level changes will shift the entire consumption function upward of downward, depending on the direction of price changes. These shifts are due to real wealth changes, not due to real income changes. In short, we can say that in so far as the price level changes shift the consumption function, they work through changes in real wealth, not in real income.

Inflation Rate

Prices may be rising slowly from a high level, or they may be rising rapidly from a low level. The former is the case of low inflation with high general price level, while the latter is one of high inflation with low price level. It may be asked whether the rate of inflation, independently of the level of prices, can influence consumption, one way or the other. The issue has something to do with how people form expectations about future inflation. Will inflation continue? If so, will it

slow down or accelerate? It is sometimes suggested that if people expect inflation to continue, or, worse still, to accelerate, they may like to spend more out of current income than otherwise. They may be swayed by the feeling that 'now' is the best time to buy. Equally sensibly, others may think that inflation will slow down and, therefore 'now' is a bad time to buy.

So, what is likely to be net effect of inflationary expectations on current purchases? Again, no unambiguous theoretical answer is possible. Keynes appears to have felt that expectations could be ignored in the analysis of aggregate consumption, because such expectations may cancel out. Unfortunately, the empirical evidence on people's tendency to 'beat' inflation or gain from it is mixed. Economists therefore, usually ignore the effect of rate of inflation as a determinant of consumption in the construction of their macroeconomics models.

Distribution of Income

A given level of aggregate disposable income may be distributed among income classes more equally or less equally. In general the more equal the distribution, the larger is supposed to be the fraction of income consumed out of a given disposable income. Imagine two scenarios. In one, 30% of the highest income families enjoy 50% total income, while the lowest 30% have only 10% of the total. In the other, the lowest 30% of the families get 50% of the income, while the richest 30% get 20% of the total. It has been clamid that in the latter scenario, a larger fraction of any given level of disposable income will be consumed.

Why is this likely? Because low-income families, as family budget studies show, tend to consume a larger proportion of there incomes than their richer counterparts. The argument, however, is not wholly convincing, because it seems to confuse high average propensity to consume with high marginal propensity to consume. The average propensities may well vary across income groups. But there is some evidence to suggest that the marginal propensity may be the same at all levels of family income. In that case, a redistribution of income from the richer to the poorer households would have virtually no effect on aggregate consumption. There is another point which seems relevant here. It is about the appropriate concept of income to be related to consumption. For example, if one believes in the life cycle hypothesis about consumption, then any redistribution of current income will insignificantly affect lifetime income and hence the profile of lifetime consumption.

Demographic Factors

Changes in composition of the spending units in the total consumer population can presumably have some effect on aggregate consumption. And this effect is likely to be independent of changes in aggregate income (or of any other variable considered so far). Consider all families at any given income level. Not all of them will be expected to consume the same amount of their income because they may differ in various demographic characteristics. What are some of these characteristics? We can immediately think of a few. First, some families may have fewer members than others; other thing equal, the latter are likely to spend more. Second, even two families with equal number of members may differ in their age and gender composition; the family with more young people, possibly children and students, may spend more.

Third, families may differ by place of residence; urban dwellers are likely to spend more than their rural counterparts. Fourth, families may vary with respect to racial or ethnic characteristics; non- whites save more than whites at any given income level. We may come up with other distinguishing features which can influence family consumption behavior in some ways. But whatever the merits of these difference in terms of their ability to cause consumption differences, they should not be overemphasized. On the average and for the whole population, these factors change quite slowly. Therefore, these factors can safely be ignored in an analysis of short run aggregate consumption behavior.

Other Factors

We have already talked about price expectation as a possible influence on consumption. But expectation need not be confined to price alone. For many families, expectations with respect to future income levels may be an important factor in their consumption plans. Likewise consumer expectations with respect to economic, social and political circumstances can affect real consumption in any period. Easy consumer credit terms can stimulate consumer spending, especially on consumer durables like cars, televisions etc. Moreover, the saving patterns of many families have undergone important changes with the arrival of long term saving commitments through life insurance policies, private pension plans and so on. Once committed to any of these schemes, savings become almost automatic and hence less sensitive to changes in family disposable incomes.

Questions for Review

Short Questions

- 1. Explain why you would expect the effect of interest rate changes on savings at the aggregate level to be quite small.
- 2. The real value of which form of consumers wealth is affected by changes in the price level? Why?
- 3. "In evaluating the effect of more equal income distribution on consumption, one has to be careful about distinguishing between marginal and average propensities to consume. "Why?
- 4. Why are demographic factors likely to be of some importance when one tries to predict consumer spending?
- 5. Do you think institutional saving schemes like private pension funds have weakened the relationship between income and consumption for middle income families? Give seasons for your answer.

Broad Questions

- 1. Discuss how the rate of interest can influence the volume of consumer spending.
- 2. "The redistribution of income towards poorer families can stimulation overall consumption, but the effect is unlikely to be empirically significant" Do you agree? Give reasons.
- 3. "The price level changes can affect consumption by changing real income as well as real wealth." Explain how.

Unit Highlights

- SHORT-RUN & LONG-RAN AGGREGATE SUPPLY CURVE
- ➢ BUSINESS CYCLES

Technologies Used for Content Delivery

- **❖** BOUTUBE
- **❖** BOU LMS
- **❖** WebTV
- Web Radio
- Mobile Technology with MicroSD Card
- **♦** LP+ Office 365
- **❖** BTV Program
- Bangladesh Betar Program

Lesson 1: Short-Run & Long-Run Aggregate Supply Curve

After studying this lesson, you will be able to

- > see what the aggregate supply curve shows
- understand why distinguishing between short-run and long-run aggregate supply is of crucial importance.
- realize why the short-run aggregate supply is positively sloped, while the long-run aggregate supply curve is vertical.
- > appreciate why some macroeconomists claim that even the short-run supply curve is vertical.

Short Run and Long-Run Aggregate Supply Curves

In our discussions so far, we concentrated most of our attention on the derivation of the aggregate demand curve. In lesson 4 of unit 5, we introduced the aggregate supply with a few brief comments. This should not give the impression that the aggregate supply is perhaps less important than aggregate demand in macroeconomic analysis. This is far from true. Over the last quarter century. i.e. economists have come round to the view that aggregate supply is critical to understanding how the macroeconomy evolves over time. In modern macroeconomics, the distinction between the short run and the long run aggregate supply is crucial.

In the short run, the aggregate supply together with aggregate demand can explain the ups and downs in output in the economy. But in the long run (a decade or more, perhaps), economic growth or rising living standard is unthinkable without increases in the aggregate supply. Therefore, the question "How steep is the aggregate supply curve" is the main controversy in modern macroeconomics. In the long run, as we will see, the aggregate supply curve is vertical, though economists may disagree on the time span which should be designated as the long run. The long run output is then determined by aggregate supply alone, while the price level depends both on aggregate demand and aggregate supply. By contrast, both the price level and the output level are determined in the shot-run by aggregate demand and aggregate supply, because the aggregate supply curve is positively sloped. Moreover, the magnitude of the slope of the aggregate supply curve determines how a given expansion (or contraction) in aggregate demand is split into short-run price and output changes.

The Short-Run Aggregate Supply Curve

Generally speaking, the aggregate supply curve describes the behavior of the production side of the economy. The aggregate supply curve shows for each possible price the quantity of goods and services that the firms in the economy will be ready to produce, other things equal. In the shoutrun, the higher the price level, the larger is the amount of output supplied (other thing being equal). In other words, the short-run aggregate supply curve is upward sloping for a considerable range of output.

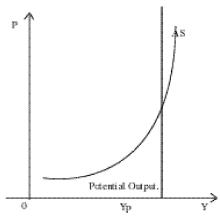


Figure 4.1: A short run Aggregate supply curve

A typical upward sloping short-run aggregate supply curve is shown in Figure 6.1. It is easy to see why the curve slopes upward. The firms are motivated to produce by the prospect of profits. But the profit to be had from a unit of output produced is given by the difference between the price at which it can be sold and its average cost of production. That is

per unit profit = price - unit cost.

Therefore, what happens to the unit profit as the price level rises depends on how the unit cost responds to output expansion.

If the unit cost lags behind the price rise, firms will be encouraged to increase output. Are there reasons to suppose that this is what is likely to happen in the short-run? The answer is yes, because labour and some other inputs used by firms can be obtained at relatively fixed prices for some period of time (though not for ever). For instance, many firms employ workers on the basis of long term contracts (ranging from one to three years) which specify money wage rates for the period (with partial adjustments for price changes in the mean time). Even where there are no labour unions and hence no such labour contracts, it is quite rare for wages to be raised more than once a year. This inflexibility of wage costs to changes in market conditions is of some importance for firms because labour costs constitute quite a significant proportion of total costs. What is true for labour costs is often true for some other inputs (such as raw materials and components) which are also purchased on the basis of long-term contracts. Moreover, some input prices fixed by the government are slow to change. Examples are the prices for electricity, gas, water and telephone services. Of course, none of these contracts or fixed prices last for ever; but many of them last long enough to allow unit costs to lag behind the price level.

Now if the selling prices rise (due to changes in market conditions, e.g. shifts in demand) while wages and other input costs remain relatively fixed, per unit profit goes up, and firms will be keen to step up production. The opposite happens when the price level falls: the profit margin is reduced and firms respond by cutting back on production. This type of behavioral response from firms makes the short-run aggregate supply curve upward sloping.

To summarize, the reason why the short run aggregate supply curve is positively sloped is that in the short run labour and other input costs are fixed (or, at any rate, do not rise as fast as the price level) so that higher prices mean higher profit margins and, therefore, higher production.

One more comment about the shape of the short run aggregate supply function is in order. Look at the particular curvature with which we have drawn the aggregate supply curve in Figure 6.1. It is flat at low levels of output and gets progressively steeper at higher output levels. We briefly mentioned the reasons for this in Lesson-4 of the previous unit. We have to add little to what we have stated there. At low levels of output capacity utilization is low and lots of resources are unutilized. In this situation, if there is an upsurge in demand, firms can increase output by raising

prices modestly, because unit costs are expected to rise slowly. The aggregate supply curve is therefore, relatively flat. By contrast, when the economy is booming and demand is very strong, the economy has very little unutilized capacity or other resources. Here attempts to acquire more resources for additional production will cause the unit cost to rise more sharply than before. Therefore, prices have to rise in a commensurate fashion. On the demand side too, high prices are unlikely to be fiercely resisted by consumers because of the prevailing high wages. Therefore, the slope of the shot-run aggregate supply function (which reflects the response of costs to output expansion) generally rises as the degree of resource utilization increases.

Shifts in the aggregate Supply Curve

The aggregate supply curve shifts whenever the factors (the "other things") that determine its position change. What are these factors? One set of factors is obviously the input prices (prices of raw materials, energy, labour and so on). If any of these prices goes up, the unit cost will rise, and therefore, the supply curve will shift upward, implying that the same level of output will be supplied at higher prices. Conversely, lower input prices will move the aggregate supply curve in the opposite dissection, allowing the firms to supply given amount of output at lower prices than before.

Another factor that impinges on the unit cost of production and, therefore, on the position of the aggregate supply curve, is the state of technology. For example, a technological breakthrough increases the productivity of labour (or of capital) and tends to reduce per unit cost. When this happens, the aggregate supply curve shifts downward.

Finally, the most obvious factor should not escape our notice; the availability of labour and capital. The larger the size of the labour force or of the stock of capital, the greater is the economy's capacity to produce, and the further out the aggregate supply curve will be from the origin. Therefore, as the labour force grows over time and the stock of capital increases through investment, the aggregate supply curve will shift outward, and the economy will be able to supply more output at any given price level than before.

The Long-Run Aggregate Supply curve

The short-run inflexibility of some components of cost vanishes in the long run. Wage contracts, rent agreements, regulated prices-all become variable and subject to negotiation in the long-run. Labour unions, for example, see that their real wages have in the mean time been eorded by inflation; they will insist on compensation through higher money wages. If the general price level goes up say, by 10%, all elements of cost (wages, rents, regulated prices etc) will ultimately rise by 10%. That is, the unit costs rise in proportion to the rise in the price level.

In this scenario, firms will be unable to profit from higher levels of aggregate demand. In the long run, when all elements of costs have fully adjusted to higher prices, the equilibrium output will get back to the potential level (Yp). Therefore, in the long run, the aggregate supply curve is vertical at the level of potential output (corresponding to the natural rate of unemployment) as shown in Fig-4.2.

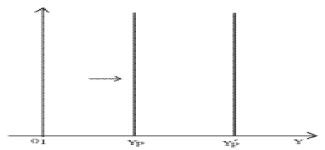


Fig.2 The Long-Run Aggregate Supply Curves

This curve can, of course, shift to the right as the potential output grows over time owing to accumulation of capital, growth of the labour force, or improvement in technology.

Incidentally, note that some macroeconomists claim that the aggregate supply curve is vertical even in the short run. Their agreement is that people anticipate inflation and do so correctly. Therefore, in negotiating long-term wage contracts they allow for price changes. As a result, the very basis for short run output response to higher prices disappears, and the aggregate supply curve becomes vertical. In this case, expansionary fiscal or monetary policy cannot reduce unemployment even in the short run. Most economists, however, disagree with this position and stick to the view that in the short run higher prices can bring forth higher output (i.e. the short run aggregate supply curve is positively sloped).

Review Questions

Short Questions

- 1. Explain why a distinction between the short run and the long run aggregate supply curve is important in macroeconomic analysis.
- 2. What determines the slope of the short run aggregate supply curve? How is it related to the degree of resource utilization?
- 3. "According to some economists, even the short-run aggregate supply curve is likely to the vertical" How do they justify this position?

Broad Questions

- 1. What factors determine the position of the short-run aggregate supply function? Discuss each of them briefly.
- 2. Why is the long run aggregate supply function vertical at the potential output level? When and why will it shift to the right? What is the implication of a vertical AS for demand management policies?

Lesson 2: Business Cycles: Genesis and Features

After studying this lesson, you will be able to

- know what the natural rate of unemployment is;
- know that real output does not grow smoothly along the trend path;
- > understand why the real output fluctuates around the trend giving rise to business cycles;
- > see what the different phases of the business cycles are and how they are related.

Business Cycles: Genesis and Features

From our discussion in the previous lesson, we know that the aggregate supply in the long run equals the potential output. The potential output, it may be recalled, is the level of output which the fully employed labour force of a country can produce in a given period. The term fullemployment is used here in the economic, not physical, sense. At any time, some people will be in-between jobs, quitting some and looking for others. When the members of the labour force other than these people find job at the existing rate of remuneration, they are treated as employed. In the economic sense, then, full employment exists when those who want to be employed at the going wage rate are employed. This definition of full employment allows for unemployment of those between jobs. These people make up the group known as the frictionally unemployed. The rate of unemployment corresponding to this situation is also call the natural rate of unemployment (or full employment rate of unemployment!). The actual rate, can of course, fall short of, or exceed, the natural rate, depending on circumstances in the market. When the economy is booming, demand is high and business expectation buoyant, the actual rate may be less than the natural rate of unemployment (and the actual output exceeds the potential level). On the other hand, when the demand is weak and business optimism is ebbing, the actual rate of unemployment may exceed the nature rate (and actual output is below the potential output).

The potential output can grow over time, as mentioned earlier, if a nation's labour force grows, capital stocks increase though investment and technological improvements take place.

In Fig 6.3 curve A shows the trend path of real (potential) output over-time.

Unfortunately, factors are not fully employed, and output is not at the potential level, all the time, no matter how much we long for stable, steady growth. Actual output fluctuates, instead, around the trend level.

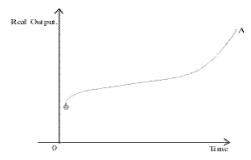


Figure –6.3: Trade output over Time

The reasons for these fluctuations are complex but the basic mechanism can be illustrated with the help of the tools of aggregate supply and aggregate demand. Consider Fig-6.4 which depicts how the equilibrium price-output combination is determined in the AD-AS framework. In panel (a), the levels of AD and AS are such that the equilibrium output is at the potential level, Y_p. Now suppose that for some reasons (say, a drop in real exports), AD_o falls to AD₁, causing the output level to fall from the potential level (Y_p) to Y₁ which corresponds to a rate of unemployment higher than the natural rate. On the other hand, if AD surges ahead (say, because of an exogenous growth in real exports), the aggregate demand

curve shifts to AD₂, raising the real output to Y₂. As a result, unemployment falls below the natural rate.

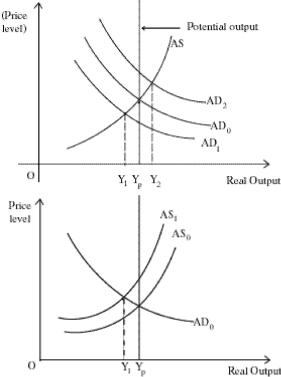


Figure 6.4: Shift in Real Output owing to demand & Supply shocks

Fluctuations in output and employment can equally come from the supply side, as illustrated in Fig. 6.4(b), where as a result of a leftward shift of the aggregate supply curve, the actual output goes down from the potential level Yp to Y1, causing unemployment rate to go above the natural rate. This is a case of an unfavorable supply shock, arising from, say, a rise in the price of an important input like energy, or a crop failure. The supply shock may be favorable too, as in the case of a bumper crop, or a substantial fall in important input prices. In this latter case, the actual output will overshoot the potential level, and unemployment will fall below the natural rate.

In short, actual output can fluctuate around the trend because of shifts in demand and supply conditions. These fluctuations generate what are known as business cycles, and through these cycles are tied together inflation, unemployment and growth experienced by an economy. More formally, business cycles are irregular, but readily identifiable, patterns of expansions and contractions in economic activity around the path of trend growth.

Features of the Business Cycle

The patterns of business cycles are irregular, and no two business cycles are quite the same. You may wonder why they are called 'cycles' at all. Irregular though they are, the business cycles have a family resemblance, exhibiting some identifiable phases, as shown in Figure-6.5.

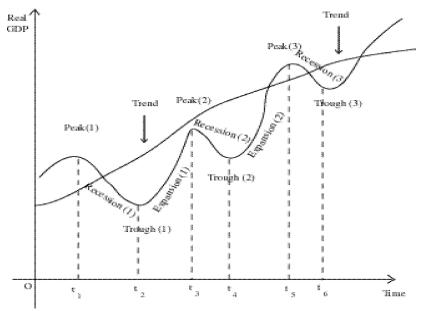


Figure 6.3: Business Cycles

Identifying a business cycle may conveniently begin with a definition of a recession. A recession refers to a situation in which the economic activity is declining. But how far must economic activity decline before we can recognize it and say that the economy is in recession? In the US, where quarterly data on GDP are available, the economy is said to be in recession, when the GDP declines for two or more consecutive quarters. In any case, persistent decline ineconomic activity cannot escape notice for long, and identification of a recession is not difficult.

During a recession consumer purchases decline sharply. As a result, inventories accumulate unexpectedly, especially in those industries which produce consumer durables like automobiles, television sets and washing machines. If consumers face financial difficulties or, are pessimistic about their future incomes, they can easily postpone purchases of these goods. When a recession hits the economy, business profits drop, and as firms cut back on production in the face of accumulating inventories, real GDP falls. But with the fall in real GDP, incomes of workers fall which in run leads to further fall in consumer purchases. Businesses respond by reducing investment in plant and equipment. Unemployment mounts, and inflation slows down. The recession ends with the trough, which is the time when the economic activity is at its lowest.

The recessionary phase is followed by a period of expansion (also called recovery). Output increases, and profits, employment, wages, prices and interest rates tend to rise in general. The upswing or the expansionary phase ends in another peak when the real GDP is at its highest. This represents a turning point and the economy moves into recession again, reaches a trough, is followed by recovery (expansion) leading to another peak and so on.

In summary, business cycles show that actual output does not grow smoothly along the trend; it fluctuates irregularly around the trend. From the peak, the actual output falls to trough via recession, and then to another peak through recovery, only to nosedive into another recession and so on. Note carefully from Figure-6.5 that output movements are irregular with respect to both time and size. For instance, the duration of recession (1) in Figure-6.5 is larger than those of recession (2) and recession (3). Similarly, the periods of recovery during expansion are unequal. On the other hand, the depths of recessions are not the same, nor are the heights of expansion. It is also important to note that the recovery may be incomplete i.e. the recovery may hit a peak before it reaches the potential output (see Figure 6.5, peak 2 which is below the potential line).

Review Questions

Short Questions

- 1. What is the natural rate of unemployment? How is it related to the potential level of output?
- 2. What are the business cycles? Try to guess why no two cycles are similar.
- 3. In what sense, a recovery can be incomplete? Can you guess why?

Broad Questions

- 1. Attempt a general explanation of why real output does not grow smoothly along the trend path.
- 2. What are the different phases of business cycles? Discuss their characteristics.

Unit Highlights

- > PROBLEMS, MEASURES AND CATEGORIES OF UNEMPLOYMENT
- ➤ BEVERIDGE CURVE
- ➤ LABOUR MARKET IN BANGLADESH

Technologies Used for Content Delivery

- **❖** BOUTUBE
- **❖** BOU LMS
- **❖** WebTV
- Web Radio
- ❖ Mobile Technology with MicroSD Card
- ❖ LP+ Office 365
- **❖** BTV Program
- Bangladesh Betar Program

Lesson-1: Problems, Significance and Measures of Unemployment

After studying this lesson, you will be able to

- ➤ How persistent is the problem of unemployment?
- ➤ How pervasive are the effects of unemployment?
- ► How are official employment and unemployment figures obtained?
- What are the flaws of the methods of measurement used?

Problems of unemployment and its significance

Some amount of unemployment is inevitable in any economy, however efficient the economy is. Unemployment beyond this inevitable level, tolerable or intolerable, is a problem which is experienced by all the countries irrespective of their stage of development. Unemployment may some time imply not only the under-utilisation of labour force but also under-utilisation of other factors of production and low level of output too. Unemployment, if it is a prolonged one, brings great misery for the victim. It also entails huge social cost to the extent that the whole social fabric may be endangered. Though high rate of unemployment as experienced during the great depression is less likely to occur at present in advanced market economies, whenever unemployment rate approaches double digit figure in such countries, government, political parties, industrialists and businessmen as well as common men express deep concern.

In underdeveloped countries like ours official unemployment figures do not reflect the gravity of the problem. Production activities in such countries are carried out under arrangements significantly different from those in advanced countries. Composition of output in underdeveloped countries is different from that in developed countries too.

An appraisal of types, causes and impact of unemployment are essential for better understanding of the implications of unemployment.

Measures of unemployment

Total population in a country may be seen as sum of total labour force and number of persons not in the labour force. Total labour force, on the other hand, includes civilians employed, armed forces involuntarily and unemployed people. Till 1989 different census surveys of Bangladesh considered labour force to be constituted of only those who were above 10 years of age and were employed or were looking for employment. A person helping his family members in the agricultural field without receiving cash or kind specifically in exchange of the services was also considered to be a part of the labour force. 1989 labour force survey included activities like post harvesting operations (threshing, parboiling etc.) and raising poultry, livestock etc. in the homestate as economic activities and hence for the first time a substantial number of women engaged in those got recognition as a part of the labour force. That practice continues till date. People who seek job in the reference period (usually a week) but can not get any are considered to be involuntarily unemployed and are considered to be a part of the Labour Force. But those who are unemployed but still do not or can not seek any job in the reference period are not considered to be a part of the labour force. Unemployment rate for civilian population is obtained by using the following expression.

Unemployment rate (U) = Number of total involuntarily unemployed (TU)/

Civilian Labour Force (CLF) × 100%

where CLF = Civilian Unemployed and Civilian Employed Labour Force or Civil Labour Force

The above expression gives unemployment rate for civilian labour force. For Total Labour Force (LF) unemployment rate is given by $U' = TU/LF \square 100\%$. As is obvious U>U'. Problems faced by this method or similar methods as practiced in other backward, and developed countries are manifold and serious too.

In the above formulation each unemployed person who is seeking a job in the reference period is assigned equal weight. Duration of unemployment is not at all considered. All employed persons are also assigned equal weights though. There are part-time employees and these may be disguised unemployment among the employed people. These formulations also ignore the problem suffered by those who badly need job but are sure that they won't get any and out of frustration they stop seeking jobs. On the other hand a simple reference period for all economic activities, as is obvious, may exaggerate or under report unemployment problems as a significant number of jobs are season-specific.

A modified measure or rate of unemployment, U" is given by the following expression:

$$U'' = (TU/LF).t = (LF-TE).t/(LF)$$

wheret is the proportion of total time the unemployed are, on average, out of work and TE is total employed.

Some other problems are encountered in measuring the rate of unemployment for the economy as a whole. How many days a year and how many hours a day a person has to be engaged in work in order to be considered to be employed in a year. We may agree about number of days and number of hours for a particular industry, location and community. But such number will vary across different sectors, communities and locations.

Rate of unemployment for the economy as a whole also fails to reflect the following: A person fully employed in terms of time criterion may have a very low level of income too inadequate to meet the basic needs. An employed person may not be satisfied with his job because he does not have a job appropriate to education and skill acquired by him. He may have neither job satisfaction nor a satisfactory level of income. In family-based economic activities in agriculture and cottage industries work and output are shared by family members. There may arise situations when some of the workers can be shifted from those activities without adversely effecting the level of output. The positive relationship between employment and output apparently does not hold in this case if we do not adjust employment rate by actual length of time an individual worker work in a year. As surplus workers leave the activity family members left at home will have to work longer hours, and or greater number of days a year.

Lesson-2: Types of Unemployment

After studying this lesson, you will be able to

- Different types of unemployment.
- ➤ What is Beveridge Curve?
- Economic interpretation of different types of unemployment.
- > Categories of Unemployment.

Firstly we introduce three categories of unemployment: Open or Visible Unemployment, Hidden Unemployment and Disguised Unemployment.

Official unemployment figures published from time to time present Open or Visible Unemployment figures. Openly unemployed people make a part of the labour force. They are reported to be looking for job in the reference period without any luck. Hidden unemployment refers to the people who are not even considered as constituting a part of the labour force by the official statistics. These people had unsuccessfully searched for jobs for a pretty long period of time without any success. They become so frustrated that they subsequently abandoned job search. When the government conducted the labour force or employment survey, such people reported that they were not looking for jobs. Such reporting reflects frustration rather that deliberation.

More complex is the phenomenon of Disguised Unemployment. This unemployment occurs in case of family based enterprises with small amount of land or / and capital. Family members do all the work. While work load is shared by all working members of the family, output is shared by both working and non working members of the family. There may be instance (too many family members with too little capital and land to work with) when some of the workers can be withdrawn from the family work without causing any decline in level of output. Working members left in the family farm, will have to work for longer hours a day. Assuming that they will have to work so many hours considered as the norm, the number of withdrawn persons represent Disguised Unemployment equivalent.

We can also distinguish between two other types of unemployment: Natural Unemployment and Cyclical Unemployment. The latter type of unemployment occurs during recessions. Natural rate of Unemployment refers to a roughly stable rate of unemployment below which the actual rate of unemployment seldom dips. Natural Unemployment is comprised of Frictional and Structural Unemployment. Structural Unemployment occurs due to mismatch between location and skill requirements of vacancies and location and skills possessed by the unemployed persons. Frictional Unemployment occurs even if wages are perfectly flexible and appropriate and adequate number of job opportunities are available in the locations where unemployed persons live. This type of unemployment occurs mainly because job search and recruitment of personnel are time consuming processes. Cyclical Unemployment occurs when aggregate demand expressed in money terms declines and at the same time presence of long term wage and price contracts prevent the inflation rate from shifting down rapidly enough in response to slower nominal GNP growth. In this case level of real wage that prevails is found to be greater than the level necessary to clear the labour market. At that wage number of persons seeking job exceeds the number the employers demand giving rise to Involuntary Unemployment. Voluntary Unemployment at a particular wage is represented by number of persons in the work force who are not willing to work at that wage level.

The last type of unemployment we consider is Seasonal Unemployment. This type of unemployment occurs due to presence of some season-specific production activities and uneven spread of employment opportunities throughout the year. Seasonal Unemployment may be considered as Natural Unemployment.

Natural Unemployment

No market economy has ever fully employed its labour force. There seems to be a minimum level below which the rate of unemployment seldom dips. This rate of unemployment is called natural rate of unemployment. When the rate of unemployment equals the natural rate, the number of people involuntarily unemployed is equal to number of job positions remaining vacant, i.e. theoretically speaking there is full employment or equilibrium in the labour market. If an attempt is made to reduce the rate of unemployment below the natural rate there would be an upward pressure on wages. Conversely, if unemployment rate is higher than the natural rate wages would tend to decline. In the absence of change of labour productivity rise of wages would lead to rise of prices, while fall of wages would lead to fall of prices. That is why natural rate of unemployment is also called Non-Accelerating Inflation Rate of Unemployment (NAIRU).

Beveridge Curve

If the vacancy rate is a reasonable measure of excess labour demand, then the vacancy rate in inversely related to the rate of unemployment. The inverse relationship between the vacancy rate and the unemployment is known as the Beveridge curve. In the figure 7.1 below we present a family of Beveridge curves. Beveridge curve would shift leftward to the origin as the labour market becomes more efficient in matching the workers with the jobs. The point of intersection between the relevant Beveridge curve and a 45° straight line through the origin shows the natural rate of unemployment associated with theoretically full employment level of income. As the figure 7.1 shows with a higher level of efficiency (E_2) of labour market natural rate of unemployment rate is 6% while with lower level of efficiency (E_0) , natural rate of unemployment rises to 12%.

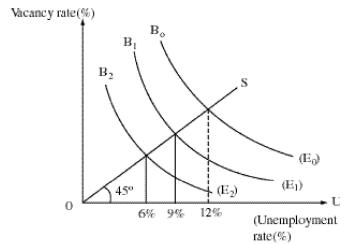


Figure 7.1: Beveridge Curve

As said earlier Natural unemployment is comprised of two different types of unemployment: (1) Frictional (turnover) and (2) Structural (mismatch) unemployment.

Frictional Unemployment

This type of unemployment occurs even if wages are perfectly flexible and appropriate job opportunities are available for the unemployed in the same location. In the real world there will always be some workers who have retired from or just entering into labour force. Some workers voluntarily quit their jobs or are suspended, and search better or similar jobs or are in the midst of the process of accepting and subsequently joining a new job. Some laid off workers may get their

jobs back in the same firm. Finding suitable jobs and filling vacancies both are time consuming processes. There will always be some job jeekers who are between jobs. Frictional or Turnover unemployment refers to the unemployment experienced by those groups of workers.

Economic Interpretation of Frictional Unemployment

There may be valid economic reasons why a youngster should refuse a job offer rather than accept it or why should he quit a job. Foregone earnings from such jobs may be considered as an investment for job search. If the return of this investment in the form of offer of jobs ensuring higher wages for longer period in the future and better working condition, the investment may appear to them to be worthwhile. Increase of rate of tax on wage or/and increase in unemployment benefits have the potential to make the length of search time longer. Many workers on lay off may not have the incentive to seriously search new job- they would rather wait to be recalled to their old jobs. Entry into job search may be lessened by reducing the reasons behind quitting and re-entry and initial entry into labour force in order to reduce frictional unemployment. Alternatively or simultaneously economic incentives that unnecessarily prolong the search may be reduced. Providing easy access to information about appropriate jobs may be useful in both the options.

Structural Unemployment

This type of unemployment occurs when vacancies and unemployment coexist but locations and skills of the vacancies do not match with the locations and skills acquired by the unemployed people. While Turnover or Frictional unemployment for a group of workers may be of short duration, Mismatch or Structural unemployment has much longer duration. Unemployed people must know what skill they must learn or what location they must go for getting jobs or both. They need to learn new appropriate skills and or meet necessary expenses to move to a new location to get a job.

Economic Interpretation of Structural Unemployment

For the sake of convenience let us assume that there is a mismatch between the skill requirements of vacant jobs and present skill of currently unemployed individuals. Such a mismatch can be partly accounted for inflexibility of relative wages. High level of minimum wage, it is argued, is responsible for higher unemployment rate among the teenagers and the black in the USA. On the other hand, if difference between wages of skilled and unskilled workers is small, the incentive to acquire skill may be impaired. Ability to read, write, understand instruction, perform arithmetic is essential for receiving training. But such education is not provided by industrial employers. Same is the case with some training which is general in nature. Due to the public good nature of education and basic skills those have to be provided solely by the government. Employers cannot reap the full benefit from such training investment. The employee may quit long before completion of the training programme conducted by the employrs. When the skills taught are specific to a particular job in a farm, the training can be financed by paying the employee less than his productivity during the training period. Sometimes employees choose much older or otherwise less qualified people for training so that probability of quitting after the completion of training programme is lessened. Private sector provision of specific skills may turn out to be inadequate as well as inappropriate due to change of demand of different skills caused by unforeseen expansion or contraction of the size different industries. Besides, there may be a lack of synchronisation between graduation of technical or general students on the one hand and emergence of vacancies and commencement of recruitment. On the other structural unemployment may also result from discrimination against a particular sex, race or region. In certain cases those occur due to long standing customs, values and social pressure while in some cases there may be some valid economic reason for employers in discriminating. Mismatch due to

inappropriate location is mainly caused by the inability of the married people with children to move from one city (or town) to another city (or town) especially when both husband and wife work. Another reason for such mismatch is simply the fact that the unemployed persons do not know location of vacant job positions.

Cyclical Unemployment

An economy with an unemployment rate above the natural rate is said to have Cyclical unemployment. Cyclical unemployment, hence, is the difference between actual rate of unemployment minus the natural rate of unemployment. This type of unemployment occurs during recessions. During recession total spending and output fall, prices keep on falling. Aggregate demand falls short of aggregate supply in the product market. In the labour market too overall demand for labour is low compared to over all supply. During recession unemployment does not remain confined to few economic activities, individuals or groups, rather it becomes pervasive.

Economic Interpretation of Cyclical Unemployment

As a response to the above definition of cyclical unemployment the pertinent question would be why market wages do not fall to bring the equality between demand and supply of labour and reduce the unemployment rate to the natural rate.

Voluntary and Involuntary Unemployment

Classical and Neoclassical economists would argue that in a frictionless economy with perfectly flexible wages and prices involuntary unemployment is ruled out. Figure 7.2 shows demand and supply of labour curves D_L S_L and equilibrium money wage OW₀ in a perfectly competitive framework. If there is no friction (an unrealistic assumption), at OW₀ money wage there will be no involuntary unemployment. Some in the labour force may remain unemployed at this level of wage, because they won't work at any wage rate below or equal to OW₀. But they are regarded as voluntarily unemployed. Voluntary Unemployment at a particular wage level is number of persons in the labour force who are not working at the wage level.

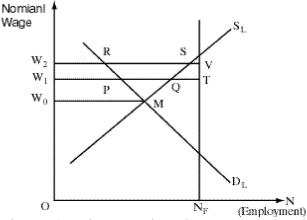


Figure 7.2: Voluntary and Involuntary Unemployed

At any wage above OW₀ there will be varying level of unemployment rising with the increase of money wage. At OW₁, PQ level of unemployment, known as involuntary unemployment emerges. Voluntary unemployment at this level of wage QT. At OW₂ involuntary unemployment shots up to RS while voluntary unemployment declines to SV. Involuntary unemployment at a particular wage level is the number of persons in the labour force who want to work at that wage level but do not get any work. If wages are flexible involuntary employment cannot exist but for a

very short period of time as excess supply of labour would drive wage downward to equilibrium level of wage OW₀. Frictional employment if it once occurs due to mismatch between location and skill of vacancies and those of unemployed persons, would disappear over time if relative wages are flexible. In a changing world, however there will be some Frictional unemployment, as the mismatch could frequently occur. Similarly some unemployment due to information and search problem would prevail irrespective of the degree of flexibility of wages.

Involuntary unemployment except for a vary short period is ruled out by flexible wage. But economic history records periods of recessions when a large number of qualified works are unable to get jobs at the going wage for a long period of time. Keynes on other hand, opined that labour market is chanracterised by downward rigidity of money wages. When there is a downward shift of demand for labour for labour consequent on a decline on aggregate demand for goods and services, downward rigidity of wage cause involuntary unemployment (see figure 7.3)

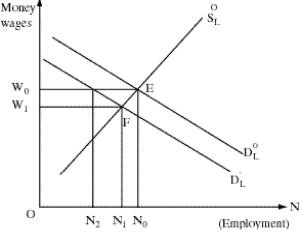


Figure 7.3: Wage rigidity and unemployment

In figure 7.3 OW₀ represent pre recession equilibrium level of money wage at which full employment occurred. The equilibrium level of wage is determined by supply and demand of labour represented by S_L^0 and D_L^0 curves receptively. Equilibrium level of employment was ON₀. As recession sets in aggregate demand for goods and services shifts downward which causes a downward shift demand of labour curve to D_L' If money wage fails to move down ward at all or if it moves downward by a magnitude less than what is the necessary to bring equality between demand and supply of labour again in changed circumstances, involuntary unemployment would emerge. If money wage level does not fall at all level of involuntary unemployment would be equal to N_2N_0 .

At this stage we must explain why money wage fails to fall from a certain level inspite of the presence of excess supply of labour at that wage level.

There are several reasons which are not mutually exclusive for the downward wage stickiness (or rigidity).

(1) Wages may be kept at a level higher than equilibrium money wage by employers themselves so that workers find it costly to shirk and have the incentive to self monitor. Employees may shirk whenever they are not monitored. If workers are paid low wages, one may take the risk of shirking since loss of job following his being caught while shirking may imply insignificant financial loss. He may have another job probably with a slightly lower wage level. If, on the other hand, the wage is set at a high level (above the market clearing level), the worker won't take the risk of shirking as job loss will imply a significant financial loss. Besides, low level of wage

induces workers to take part time jobs and or spend time in searching better jobs. Higher wage would ensure more attention, time and effort to the work.

- (2) Whatever may be the level of unemployment the workers working in a firm for pretty long period of time, may acquire some bargaining power. They might have already received some on job training. At minimum they have learnt about the working condition, have been familiar with different formalities and procedure practiced in the firm. If a new man is employed, time and money have to be spent for him to make him as knowledgeable and efficient as his senior coworkers. Besides, there are search and retrenchment costs associated with new recruitment. This reality may often lead to higher wage offer in the face of wage bargaining rather than dismissal of old workers even in a situation characterised by excess supply of labour.
- (3) Lastly, workers and employers may enter into an implicit or explicit long term contract. There is no scope of reducting the wage level within the contract period. When the contract period expires there may be no need to reduce wage as there is prevasive optimism in the business environment. If employers and workers are risk averse they will prefer a specific wage rate to a set of wage levels with different probabilities. So fixed wage level will actually be contracted in workers -firm negotiations especially if firms are risk neutral.

Lesson-3: Costs of Unemployment

After studying this lesson, you will be able to

- ➤ Causes of, and costs inflicted by different types of unemployment.
- > Structure of labour force, relative contribution of different sectors to employment, wage setting process and extent of unemployment at various aggregate levels in Bangladesh.
- > Problems of unemployment faced by youth, skilled and educated labour force in Bangladesh.

Cost of Frictional and Structural unemployment

We learnt earlier that natural unemployment is the sum of Frictional and Structural unemployment. People may decline to accept the first available job(s) which may pay little or have unattractive working condition or is not appropriate for the skill and education received by those and keep on looking for jobs. In some instances people may accept those but later leave the job to look for better jobs. In such cases frictional unemployment is inevitable. In assessing cost due to this type of unemployment we should consider the following: (1) cost arising form loss of output, (2) disutility from doing an unsatisfactory job, and (3) non utilisation or incomplete utilisation of skill, education of actual or potential workers.

Structural unemployment comprises the rest of natural unemployment. It occurs as we have learnt due to a mismatch between the skill and or location requirement of job vacancies and the present skills and or location of unemployed individuals. This type of unemployment entails:

- (1) Private costs to the individuals: These include lost income and erosion of job skills and reduction of the probability of getting a suitable job in the future
- (2) Social costs. These include unemployment and welfare benefits to be paid by the government, costs of additional crimes committed by the unemployed people as well as costs of illness and even suicide experienced by the unemployed or his family. If such unemployment is concentrated in a particular region and or in a particular community the social harmony may be destroyed.

Costs of Cyclical Unemployment

Costs of cyclical unemployment include among others output lost because the economy is not at full employment and an unemployment rate greater than the natural rate of unemployment. The rate of unemployment in excess of natural rate of unemployment is found to be positively associated with actual real GNP relative to natural real GNP. Using recent data of US economy it was found that for every 2.5% of GNP fall relative to potential GNP actual unemployment rate relative to natural rate of unemployment rises by 1%. The exact nature of the positive association was first identified by Arthur Okun. Okun's law implies that if unemployment rate falls from 6% (natural rate of unemployment) to 7% GNP would fall from 100% of its potential (full employment output consistent with 6% natural rate of unemployment) to 97.5% of its potential. Output declined by a higher percentage during recession than unemployment rate for the following reasons:

- (1) The loss to the society in terms of wages the unemployed workers could get and taxes they could pay as some of the unemployed become discouraged and drop out of the labour force.
- (2) Take home pay of many of the people who are still employed declines as overtime hours are cut.
- (3) Business profits decline sharply as firms are forced to keep some of the employees (with valuable skill and or at key positions) even when demands for the product progressively declines.
- (4) As recession continues government revenue receipts full leading to a fall in government expenditure too.

While Okun's law estimates income lost due to the increase in unemployment, the loss may not be evenly distributed among regions, income classes or communities. Such uneven distribution of misery may furnish or destroy the harmony in the society. Unemployment is found to hit the poor & people harder.

Human costs of cyclical unemployment is immense and appalling. Prolonged unemployment breeds loss of self respect and sense of being abandoned. These have pervasive impact not only on the unemployed individuals but also on their family life and children's up bringing.

Bangladesh labour market is characterised by a very high rate of labour force growth, low employment growth rate and declining labour absorption in the manufacturing sector. Agriculture still remains the major source of employment while 82% of labour force is engaged in rural sector. Both agriculture and manufacturing sectors share of employment suffered a decline over time. The decline in the relative share of agriculture employment was not matched by an increase in the share of manufacturing employment, as expected in the development process. The share of non tradable sector spread across formal and informal economic activities in the urban areas increased significantly. Male workers still dominate the labour market of Bangladesh. Femalemale ratio in the labour force had risen even during the era preceding the recognition of some of the activities performed by women as economic activities in 1989. The ratio however seems to have declined or stagnated to approximately 6:10 in the late 1990s. Another important feature of the labour market in Bangladesh is that informal sector employment provides 87% of total employment in the economy. Contribution of informal sector to total employment ranges from as high as 97.3% in agricultural and 43% in manufacturing to as low as 20% in financial and business services in case of employed male. In case of female employed those proportion are 98.8%, 65.9% and 26.7% respectively. It may be noted here that informal sector employment is characterised by low level of income, job insecurity and absence of fringe benefits, leave, medical facilities etc. Informal sector is a more important source of employment for female than male labour force.

Though labour law of this country does not permit employment of children labour it constitutes more then 10% of the labour force. Most of them are engaged in informal sector. A significant part of child labour was displaced form the RMG industries (formal private sector) during the early 1990s following the enactment of Harkin Bill in the US senate. Most of these children of poor or broken families have no honest means of surviving other than working in the informal sector.

Visible or open unemployment rate in the economy was estimated to be 2.3% of labour force in 1981. It dropped to 1.1% in 1986 but rose to 2.5% in 1996. Urban unemployment rate in 1996 was 4.5% while rural unemployment rate was estimated to be. 2.1%. Rate of rural unemployment rate for women is lower than that for men. The case is reverse for urban areas. While rural unemployment rate is found to be lower rural sector experiences significant underemployment. Most of the studies show that on the average around one third of the available labour time remains unemployed. Public sector of Bangladesh alleged to be overstaffed, appear to have significant underemployment too.

In Bangladesh the movement of real wages (general as well as sectoral wages) exhibits a slight upward trend with year-to-year fluctuation around the trend. The behaviour of real wages which show some measures of downward stickiness reflects the wage setting and wage adjustment mechanisms operating in the economy. In the public sector Wage and Productivity Commission awards wage structure from time to time. Minimum Wage Board declares, at irregular intervals, minimum wages for different activities in the formal sector. In general, minimum wages are fixed for industries marked by absence of organisedlabour. In the formal private sector characterised by organisedlabour wages are determined by collective bargaining. However public sector wages work as reference level in the wage negotiations especially for industries spread over both public

and private sector. In the vast private and informal segment of labour market wage is determined by market forces. For most of the activities/industries in informal private sector oligopsonistic market for labour is found to exist.

Public sector wages are found to have poor link with productivity. Public sector wages are found to have risen even when the public sector enterprises had been persistently incurring losses or labour productivity had fallen. In the formal sector dominated by state owned enterprises a positive association was found between trade union presence and wage and employment at the industry level. Such impact has somewhat dampened in case of employment in the past ten years or so.

We will consider problems faced by three categories labour force of Bangladesh: (1) Youth labour force, (2) Skilled labour force, and (3) Educated labour force. It may be noted here that these categories and female labour force are not mutually exclusive. Some aspects of problems of women labour force have already been discussed. Some are pointed out in the discussion below. Women labour force faces discrimination in Bangladesh as they do in other developed as well as backward countries.

Youth (aged between 15-17 years) constitute from one third to two fifth of the labourfore. They are likely to be more mobile, skilled as well as educated than those in higher age groups. Unfortunately the most unemployed in Bangladesh belong to this age group. Unemployment rate among this labour force has increased rather significantly since the mid 1980s.

During 1985-1994 number of skilled personnel almost doubled. Government make primary education universal. In recent time incentive in the form of scholarship and food grant was given to encourage female education. Government expenditure on education rose up sharply in the last decade and half or so. The irony is that unemployed skilled and semiskilled workers are found to coexist with significant number of vacancies in both private and public sector. This paradoxical outcome can be accounted for by:

- (1) Low revenue earning of government and donors pressure led to retrenchment of redundant labour and staff
- (2) Training provided by formal institutions are inappropriate, inadequate and outdated in a significant number of cases.
- (3) Personal attachment to employers gets significant importance during recruitment Relatives, friends, people coming from the same village or district from which the employer himself hailed get preference over others. Such recruits appear to be more trustworthy to the employers and they can be easily caught if they happen to cheat or commit any crime.
- (4) Unskilled workers are given on-the-job training or they simply learn by doing and seeing. During the learning process unskilled workers are given wages less than their productivity- so that investments in those workers are automatically financed.

Side by side with increase of literacy rate and significant increase of the number of graduates and post graduates unemployment rate for persons with education actually increased during 1983-1984 to 1995-1996. It is interesting to note that unemployment rate of persons with no education actuation actually declined. Concentrating on sex and location specific unemployment rate, it was found that unemployment rate among educated male has gone up irrespective of level of education received or place of residence. Same thing has happened for educated female who has received education beyond S.S.C level. For women who received education below S.S.C level unemployment rate has declined both in urban and rural areas.

The above situation can be explained by the following developments. On the supply side, there has been mushroom growth of intermediate and degree colleges until the recent past. At present the authority approves the setting up of degree college under more stringent term, while Honours

and Master degree programmes have been introduced in many government and private colleges in the recent past. A good number of universities, medical colleges and business institutes have been set up by the private sector in the past decade and half or so.

The government sectors ability to absorb new graduates has substantially declined following the privatisation of state owned enterprises and rationalisation of labour forces in the public sector. But the government sector has traditionally been and still is the most important employer of educated manpower. Though private sector has achieved significant growth rate it failed to create enough jobs for the swelling masses of university graduates.

The employment situation for educated labour force appears to be dismal even if we allow for the fact that some of the educated persons are always on the move form one job to another and wont accept any job that is available. The decline of unemployment rate among the less educated female labour is not as comforting as a casual onlooker may think. The decline can atleast partly be attributed to recognition of some household activities as economic activities and women engaged in those as employed. Besides a significant proportion of employed women are engaged in the informal sector. NGOs working in urban and rural areas and considering poor women as target group may have contributed in lowering the unemployment rate among such less educated women.

Concepts for review

Labor Force Official Unemployment Rate
Beveridge Curve Visible (Open) Unemployment

Downward Wage Stickiness Hidden Unemployment
Disguised Unemployment Natural Unemployment

(Non Accelerating Inflation Rate of Unemployment)

Okun's Law Fictional (Turnover) Unemployment

Cyclical Unemployment Seasonal Unemployment
Involuntary Unemployment Voluntary Unemployment

Answer briefly the following question:

- a. Why does not official figure of unemployment rate truly reflect the problem of unemployment in Bangladesh?
- b. Show that perfectly flexible wages can reduce, but not eliminate, both involuntary unemployment and structural unemployment.
- c. Why do we observe wages higher than market clearing wages?
- d. Why is educated unemployment rate rising in Bangladesh?
- e. 'No market economy, however efficient, can get rid of natural unemployment'. Explain the comment.
- f. What measures can be taken to reduce frictional unemployment.
- g. Briefly discuss what can be done to reduce Structural unemployment rate.
- h. Why is the problem of Cyclical unemployment more appalling than that of Structural or Frictional unemployment.

Unit Highlights

- ➤ DEFINITION AND TYPES OF INFLATION
- ➤ THE CONSUMER PRICE INDEX
- ➤ GDP DEFLATOR
- > INFLATION IN CLASSICAL MODE
- > DEMAND PULL INFLATION

Technologies Used for Content Delivery

- **❖** BOUTUBE
- ❖ BOU LMS
- **❖** WebTV
- Web Radio
- Mobile Technology with MicroSD Card
- **❖** LP+ Office 365
- **❖** BTV Program
- Bangladesh Betar Program

Lesson-1: Definition, Measures and Types of Inflation

After studying this lesson, you will be able to

- > Ambiguity surrounding the concept of inflation and a working definition of inflation.
- > Different measures of inflation
- > Rate of inflation and types of inflation.

What is inflation?

Inflation, in very simple terms, denotes a persistent rise in the general price level. There is ambiguity about the rate of price increase. Rate of price increase beyond a certain mark with or without objective basis may be considered appreciable (i.e. perceptible but not necessarily requiring adjustment by different agents or inflicting some adverse impact) or excessive (i.e. having the potential to inflict harmful effects). But there is no consensus about a specific percentage rate of price rise. After living many years with 8% - 16% annual inflation rate, 2% or 3% annual rise in general price level may not be considered inflationary by a society. The minimum rate of general price rise which qualifies to be accepted as inflation may itself rise over the years if the society continues to experience increasingly high rate of inflation as years pass by.

The next question is what should be the length of time span during which general price level is observed to rise persistently. If we agree about length of time span we may quite frequently have inflation in one period but deflation in another period. Besides, we may not have relevant macrolevel data for smaller time periods like fortnights or weeks in most of the countries.

Controversy as to whether a state of rising prices be called inflation or not does not arise when we have double digit or higher annual rate of price increase sustained over a period of at lest one year. Such states, most of the economists will agree, are inflationary states. Admitting some amount of ambiguity we define inflation as a persistent and appreciable rise in the general price level with the following clarifying note: (1) most of the prices must have sustained rise at lest over a period of one year, and (2) general price level must rise at an annual rate of 5% or more. There are still two other problems with this somewhat blunt definition of inflation: (a) it does not say what should be the measure of inflation. The Consumer Price Index, The Producer Price Index and The GDP Implicit Deflator all cover a wide variety of goods and services and hence, qualify as measures for inflation and (b) the above definition does not cover the so called suppressed or repressed inflation as they are notional and not observable. During war time markets may be substantially replaced by wage and price controls and rationing. Had the general price level not been controlled there could have been persistent and appreciable rise in the general price level. The existence of black market and rising prices in that market may bear testimony in support of that conjecture.

Measures of Inflation

Rate of inflation in year t may be worked out using the following expression: Rate of inflation in year $t = (general\ price\ level\ in\ year\ t$ - general price level in year t-1) \times 100. A price index is a measure of general price level and is a weighted average of the prices of a number of goods and services. The most important and frequently used price indexes are the consumer Price Index (CPI) the GDP Implicit Deflator and the Producer Price Index (PPI).

The Consumer Price Index (CPI)

It shows by what percentage cost of a standard bundle of consumer goods and services has risen in a particular time period (usually a year) relative to the cost of the same bundle in a predetermined time period called the base year. CPI can be found by using any of the following two expressions:

$$CPI = (\Box p_{i}^{c} q_{i}^{b} / \Box p_{i}^{b} q_{i}^{b}) \times 100 \dots (1)$$

In equation (1) p_i^c and p_i^b stand for prices for ith commodity in current year and base year respectively. q_i^b represents amount of ith commodity consumed in the base year. i ranges from 1 to n. Any of such numbers (i.e. 1, 2, 3, n) represents a particular good or service. The other alternative expression is

$$CPI = \Box \Box \Box p_i^c / p_i^b) \Box_i \times \Box 100 \dots (2)$$

 $CPI = \Box \Box \Box p_i^c / p_i^b) \Box_i \times \Box 100 \dots (2)$ where $\Box_i =$ Proportion of total expenditure for n goods and services incurred in the base year, for the ith commodity or service.

In constructing CPI index each price (or price relative (p_i^c / p_i^b) is multiplied by the corresponding fixed weight. CPIs can be found for different categories of consumers e.g. middle class urban families, industrial workers, small landowners and land-less peasants. Average reteal prices are used in the construction of CPI.

The Producer Price Index

PPI is similar to CPI in construction. It however measures the prices of large number of goods (and not services) at the level of their first commercial transaction. This index is widely used by businesses. Prices are either wholesale prices or farmgate prices. Both CPI and PPI use fixed quantity weights for prices.

GDP Implicit Deflator

Unlike the CPI or the PPI, GDP Implicit Deflator uses variable weights for prices. This deflator is primarily used to get a measure of growth of real output over time. This covers final goods and services and considers all sectors of the economy. This deflator for a particular year is obtained by dividing the nominal GDP of that year by the real GDP of the same year. Hence is the use of the adjective, implicit. Real GDP of that year is obtained by multiplying the quantities of final goods and services produced in that year by the corresponding retail prices that prevailed in predetermined base year. Such products are then added up to obtain Real GDP (or GDP in base year prices).

We can use any of the above price indices to find rate of inflation in the following manner: Rate of inflation in year, $t = \{(Price Index in year t - Price Index in year t-1)/(Price Index in year t-1)\}$ × 100%. All those indices do not consider the change of quality and introduction of new commodities. The first two indices are over estimates when people substitute relatively inexpensive goods and services for relatively expensive ones. Further more, problems arise when those indices differ widely among themselves and/ or move in opposite direction. For instance PPI may rise at an annual rate of only 3% while for CPI the rate is 8%. Such a situation probably suggest a poor or declining state of market integration. But when all the indices rise at high rates (say at double digit rate) the economy clearly suffers the brunt of inflation.

Rate of Inflation and Types of Inflation

On the basis of annual rate of increase sustained rises in prices are sometimes called creeping (less than 5%), walking inflation (5-10)%, trotting (two digit rates but less than 50%) and galloping or hyper inflation (more than 50% to 3 or 4 digit rates). The following three types of inflation are very often mentioned.

Moderate Inflation: This denotes single digit annual inflation rates. Prices rise predictably and people trust money. Long term contracts are kept in terms of money during moderate inflation.

Galloping Inflation: This type of inflation denotes two or three digit percentage annual rise of general price level. When such inflation occurs for a pretty long time most contracts are adjusted to price increases or accounts are kept in terms of a stable foreign currency. Preference for money

holding greatly diminishes. Financial markets wither away as capital flows abroad. Even then economies experiencing galloping inflation are found to survive in many instances.

Hyper Inflation: Such inflation denote annual price rise at a rate of more than 1000%. Real demand for money falls drastically, relative prices become highly unstable causing serious distortion. A profound change in income distribution occurs and a moral and an economic disequilibriam take place.

Economies are reported to have survived or even prospered during a period of hyper inflation. An important distinction in effects in inflation occurs in an economy when it shifts from unanticipated inflation to anticipated inflation. If people had become accustomed to stable general price level or creeping inflation and then all on a sudden face double digit inflation, they cannot readily adjust their behaviour in the changed circumstances. Such an inflation is called **Unanticipated Inflation.** When general price rises and the rate at which it would rise are anticipated people can better adjust with the process to mitigate the adverse effects of inflation. Such an inflation is called **Anticipated Inflation.** Such a phenomenon is observed in societies where prices keep rising at more or less constant rate for a pretty long time even though growth rate of prices may be a double digit number.

Lesson 2: Cost of and Curative Measures for Inflation

After studying this lesson, you will be able to

- Cost of anticipated and unanticipated inflation
- > *Impact of inflation on trade.*
- ➤ Phillips Curve
- > Different measures of cures for inflation

Cost of inflation in an economy depends on institutional structure of the economy and the extent to which inflation is anticipated. Important elements of the institutional structure are methods of taxation and nature of contractual arrangements. An economy is said to be indexed when certain aspects of taxation method and contractual agreement change in order to adapt to ongoing inflation. Below we consider the effects of fully anticipated inflation in a fully indexed economy.

Fully Anticipated Inflation

It should have the following characteristics:

- 1. Inflation is universally and accurately anticipated;
- 2. All savings are held in bonds, stocks, or savings accounts earning nominal interest rate;
- 3. An inflation of x% raises the market nominal interest rate for both saving and borrowing by exactly x% and there is no ceiling on nominal interest rate;
- 4. Wage and salary contracts as well as pensions are fully indexed;
- 5. Tax thresholds, tax brackets, fines and other payments fixed by law are also indexed;
- 6. Only real (not nominal) interest income is taxable, and only the real cost of borrowing is tax deductible;
- 7. Absolute prices of all goods and services as well as factors of production rise at the same rate due to inflation so that relative prices remain unaffected.

Cost of anticipated inflation in a fully indexed economy as mentioned above emerge mainly due to the practice of holding currency (notes and coins). The purchasing power of currency progressively declines as inflation continues. Since interest is not paid on currency holdings three effects called 'shoe leather cost', 'inflation tax' and "capital intensity effects" arise. Besides there are 'menu costs' which arise due to rewriting payments contracts and changing price tags associated with indexation.

Shoe Leather Cost: When inflation is fully anticipated in an indexed economy nominal interest rate will rise at the same rate as price. People would then keep less real balance and some money will be transformed into interest earning assets. By doing so people would face inconvenience of illiquidity and they would go to financial institutions morte frequently to obtain cash. The time and resource costs of the frequent trips to such institutions are termed as 'shoe leather cost' of inflation.

Inflation Tax: When inflation is fully anticipated real income remain unchanged but real value of cash balance declines while in case of zero rate of inflation the real value of income as ell as real balance both remain unchanged. The decline of real balance has similar effect as imposition of a tax. What we lose in terms of our command over real resources is gain to the government. This is called inflation tax. We must compare the cost with the benefit of this inflation tax which depends on what government does with its additional command over real resources.

Capital Intensity Effect: Fall of real worth of cash balances during inflation encourages people to shift their money holding to assets with positive return - causing a substitution of physical

capital for money. The increase in capital may raise output but it may lead subsequently to fall of total output due to diminishing marginal product of capital.

Other Costs and Impact of Inflation

Menu Costs of Inflation: When inflation is fully anticipated, the sellers are required to re-quote prices frequently. This involves a cost. The cost would be significant if there is high inflation rate.

Fiscal Drag or Bracket Drift: If the tax threshold and tax brackets are not indexed inflation may require some people who did not pay tax in earlier periods to pay income tax now although their real income has not changed. Tax rate would rise during inflation and real tax proceeds would also be higher. The rise in average tax burden implies that after tax real income declines.

Impact on Saving Decision: If nominal interest earnings are taxed, the saving decision is distorted. The decision to save depends on what would be the real after tax rate. Taxation of nominal interest earning reduces the after tax real interest income.

Unanticipated Inflation

Impact on Investment on Houses

During unanticipated inflation people in order to acquire houses may borrow from financial institutions and keep the house under mortgage which is fixed in nominal terms. Capital value of the house increases but liability and its time frame of the borrower remains unchanged. This capital gain is at the expense of creditor, the building society. The savers having deposits with such societies would lose.

Impact on Consumption

It may be wise to buy a commodity now even through borrowing. The interest earned on saving may not be enough to purchase the commodity later. Unanticipated inflation hurts those who save for their retirement. They would be more adversely affected if prices of the commodities included in their bundle of consumption increase at higher rate. There will also be a shift from private to public sector as government turns out to be net debtor. Holders of bonds will also suffer.

Income redistribution effect

Wages generally lag behind prices. Wage earning of the workers who are not organized are likely to suffer most. Pension earners also suffer. During inflation income is usually shifted form wage to profit. Output increases along the shortrun aggregate supply curve in response to an expansionary policy as long as workers fail to anticipate inflation and as a consequence wage falls. But such fall cannot continue as infinitum. Government may interfere or resistance may grow among workers. If commodities cannot be exported as their price go up lack of adequate aggregate demand may put a brake on profit.

Impact on Trade

Inflation, whether anticipated or not, adversely affects balance of trade. If a certain country experiences inflation while its trading partners do not, then its export will decline while import would increase resulting a fall of employment. This effect may be somewhat offset by a substantial depreciation of the domestic currency - but this may increase the domestic inflation rate.

Phillips Curve

Whatever may be the adverse impacts of inflation, high inflation rate are found to go hand- inhand with high output and employment at least in the short run. Over the long run there seems to be no sustained relation between a country's inflation rate and its level or growth of output or employment. The Phillips Curve better called Price Phillips Curve shows the trade-off between inflation rate and rate of unemployment. In the short run as the Phillips curve demonstrates an economy can achieve higher employment only if it accepts higher rate of inflation. The original Philips Curve introduced by A.W. Phillips depicts an inverse relationship between wage increase and unemployment. The phenomenon of original Phillips curve or Wage Phillips curve has the

following theoretical basis. The rate of increase of wage rate, W is hypothesized to depend positively on the excess demand for labour as shown in the following expression:

Where W^* = Rate of change of wage rate, N^d and N^s respectively represents demand for and supply of labour at the going wage rate, W, (N^d-N^s) = excess demand for labour and t = time. Such excess demand would occur wherever we have a wage level below the equilibrium level. A particular money wage level may appear as an equilibrium money wage at a point of time. But if ADC shifts to the right then excess demand would appear at that wage level.

It should be noted here that we have a family of demand for labour curves-each curve showing the relationship between nominal wage and amount of labour demanded stands for a particular rate of inflation. Similarly we have a family of labour supply curves- each curve stands for a particular expected rate of inflation.

Expression (1) can be rewritten as

$$W^* = h(N^S - N^d) \dots \dots \dots (2)$$

where h<0

 $(N^{S} - N^{d})$ represents excess supply of labour at a particular wage level. Equation (2) shows that W^{*} is inversely related with excess supply of labour. Unemployment rate, u = U/L can be used as a proxy for excess supply of labour (U = magnitude of unemployment and L = Labour force) so that we may write the following expression in place of (2)

$$W^* = g(u) \dots \dots \dots \dots \dots (3)$$
 where $g' < 0$.

Note that u is negatively related with W^* . Family of Wage Phillips Curves may be represented by the following expression:

$$W = g(u) + P^{e} \dots \dots \dots (4)$$
where P^{e} stands for expected inflation rate
$$W^{*} = g(u, P^{e}) \dots \dots \dots (4a) \text{ (the more general from)}$$

For each level of P^e there would be a Wage Phillips curve. As P^e rises, the Wage Phillips curve would shift up-ward implying that an increase in employment or reduction of unemployment by a certain percentage would require a higher wage rate increase. See figure 8.13.

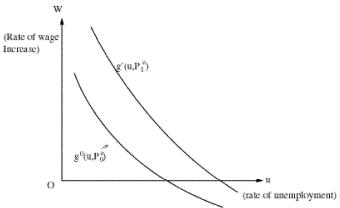
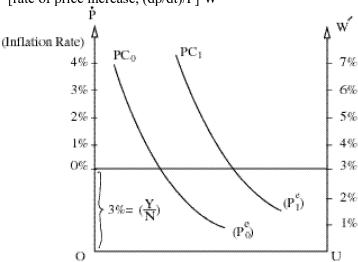


Figure 8.13: Wage Phillips Curve

In order to derive the Price Phillips Curve from (4) or (4a) we need to use the relation between W^* and P^* [rate of price increase, (dp/dt)/P] W^*



(Unemployment Rate%)

Figure 8.14: Wage and Price Phillips Curve

Note: The figure is drawn on the basis of assumption that labour productivity (Y/N) grows at a constant rate of 3%. PC_0 and PC_1 are price Phillips Curves when seen against left vertical axis (i.e. P-axis) and wage Phillips Curves when seen against right vertical axis (i.e. $W\square$ -axis) PC_0 and PC_1 correspond respectively to expected price level, P_0^e and P_1^e . It should be noted that P_1^e P_0^e

Let us assume that workers demand a constant share of income irrespective of the level of wage or price. Share of workers in total output, S_{I} can be shown by the following expression:

where W=money wage N=Level of employment, P=General Price level and Y= Level of real aggregate output.

Now
$$S_L^*=(W/P)^*-(Y/N)^*=W^*-P^*-(Y/N)^*\dots\dots\dots(6)$$

Where $(Y/N)^*$ =growth of average labourproductivity S_L^* , W^* and P^* represent growth rate of labours share, growth rate of money wage and growth rate of general price level respectively.

When labour's share in aggregate real output remains constant \boldsymbol{S}_{L}^{*} turns out to be zero. This means that

$$P^* = W^* - (Y/N)^* \dots (7)$$
Using equation (4) for W in (7), we drive
 $P^* = g(u) + P^e - (Y/N)^* + \square \dots (8)$

Equation (8) represents family of Price Phillips curve (see figure 8.15). Such negatively sloped Price Phillips curves have important policy implication. If government takes expansionary policy it can reduce the level of unemployment but only at the cost of higher inflation rate.

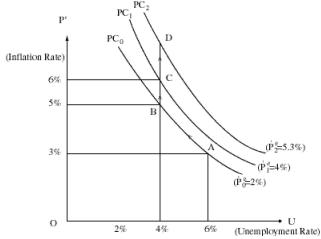


Figure 8.15: Trade-off between price stability and employment (Adaptive Expectation)

Suppose that the economy is initially at point A with 6% unemployment rate and 3% inflation rate (see figure 8.15). Government may move the economy form point A to point B through expansionary monetary or fiscal policy. At point B the economy has 4% unemployment rate but 5% rate of inflation. But the economy would not stay at point B for long. As actual inflation rate has gone up so would the expected inflation rate from P_0^e (say 2%) to P_1^e (say 4%). Government would have to resort to expansionary policy to reach C in order to maintain the rate of unemployment at 4%. This process would repeat itself so that government has to be prepared to accept accelerating inflation rate in order to maintain a lower rate of unemployment at u_1 . This trade off is rendered possible by the positively sloped supply of labour curve. Underlying such supply curve is the premise that expected inflation rate falls short of actual inflation rate. Under adaptive expectation scheme this outcome is possible as we have discussed earlier.

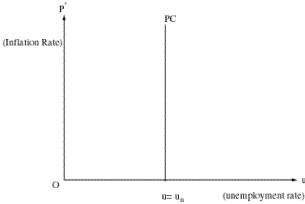


Figure 8.16: Vertical Phillips Curve (No Trade-off)

In any long run equilibrium with a constant rate of inflation, actual inflation rate would be equal to expected inflation rate. Writing $P^* = P^e$ in (8) we derive

For a given average labour productivity growth, $(Y/N)^*$, u would have fixed value called natural unemployment rate. Price Phillips Curve would be vertical at natural rate of unemployment (u_n) .

The implication of such a vertical Price Phillips Curve is that in the long run there is no trade-off between price stability and unemployment.

If workers use rational expectation rather than adaptive expectation then

where \Box_t is the random forecast error and $_{t\text{--}1}\,P_t^*$ is the unbiased estimate of P_t^*

Using (10) for
$$t-1 P_t^*$$
 (or P_t^e) in (8)

(Note that we have used time subscribes in equation (8) for our convenience)

The expected value of the unemployment rate when $\Box_t = \Box_t = 0$ is, simply the natural rate of unemployment. Even in the short run with rational expectations, all but random inflation is anticipated, so all deviations from the natural rate of unemployment are random. The impact of systematic government expansionary policy on rate of inflation or deflation is anticipated, the workers would nullify the impact on employment by appropriately shifting the supply of labour curve upward to resist decline of real wage. Hence the government cannot move the economy up along a downward sloped Phillips Curve. The effects of persistent shocks to private demand (consumption and investment) on real wage would also be anticipated. Such shocks may affect employment only when they first appear. In such a condition, there is no role for stabilization policy in the rational expectation case.

Anti-inflation Policy:

Recessionary Cure for Inflation

Proponents of this cure base their prescription on Phillips Curve analysis. If the natural rate of unemployment prevails, the economy would experience a constant rate of inflation. Use of contractionary monetary and/or fiscal policy would cause fall of inflation rate but unemployment rate would go up causing output fall below potential output consistent with natural rate of unemployment. By how much unemployment rate would fall would depend on slope of Phillips Curve. If the Phillips Curve is relatively flat reduction of inflation rate by one percentage point will require bigger increase in unemployment rate than if the Phillips Curve is relatively steep. Thus there would be greater reduction in output as well as employment in case of a relatively flat Philip's Curve. The precise magnitude of the fall of output is shown by the Okun's Curve (introduced earlier in lesson 3 of chapter 7) which depicts a positive relationship between rate of inflation and output (see also Panel ii of figure 8.17 below).

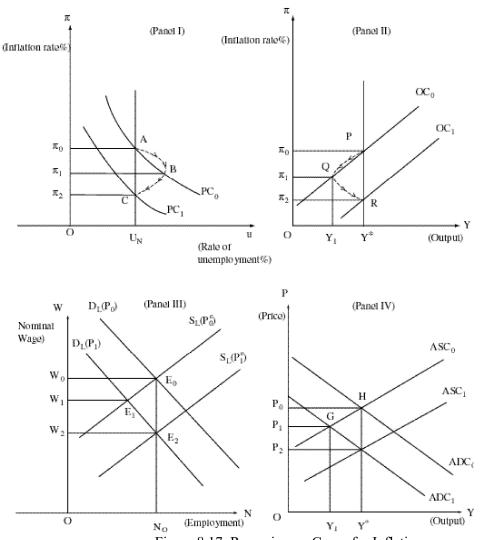


Figure 8.17: Recessionary Curve for Inflation

Note: PC₀ and PC₁ are Price Phillips Curves and OC₀ and OC₁ are Okun's Curves.

Recession starts when aggregate demand ADC0 shifts leftward (as a consequence any of the following: tax rate may be increased, government expenditure may be lowered and money supply may be reduced) to ADC1 (see panel iv of figure 8.17). Price falls initially form P_0 to P_1 . This results in a recession causing unemployment rate to exceed the natural rate of unemployment, U_N along Phillips Curve PC0 [see panel i (for movement from A to B) of figure 8.17] and reach u_1 and output to fall from Y^* to Y_1 which is less than potential output Y^* [see panel ii (for movement from P to Q on Okun's Curve, OC_0) and panel iv (for movement from G to H, the point of intersection between ASC0 and ADC1) of figure 8.17]. In the labour market nominal money wage rate falls to W_1 (see panel iii of figure 8.17) as there emerges excess supply of labour at the old equilibrium money wage, W_0 . Note that demand for labour curve shifts leftward from $D_L(P_0)$ to $D_L(P_1)$. Inflation rate drops due to fall in money wage. But the fall in inflation rate causes labour supply curve to shift to the right until the real wage is restored. The fall in wage and prices would cause ASC0 to shift to ASC1, Phillips Curve to the left from PC0 to PC1 and Oumn's curve downward form OC0 to OC1. Natural rate of unemployment would be restored

along with potential output. The length of time the economy would take to move to natural rate of unemployment (or full employment) and potential output is not precisely known. The analyses indicate that it takes some long time for expectations to adjust and to make new contracts which are essential for the recovery.

The above view is considered to be too pessimistic to some economists who argue that credible and publicly announced policies adopting fixed monetary rules or targeting nominal GDP would lead to a repaid and inexpensive reduction in inflation. Such policies helped to control inflation in a few countries at a relatively low cost in terms of transitory loss of output and employment.

Price and Income Policy as a Cure for Inflation

This policy is based on consensus between the national government and labour unions of a country. A comprehensive accord between government and labour unions would cover, under such a scheme, a wide range of issues like wages and salaries occupational health and safety and matters pertaining to industrial relation. Workers give the undertaking that they would strive for the achievement of its wage objectives over time. The government commits to maintain after-tax real income through wage-tax deals and wage indexation. Government also ensures fall of cost of living index in response to fall in wage claims. Government introduces Medicare to maintain social wage.

This approach shifted the Phillips curve downward but made it flatter. Implementation of this policy becomes difficult if a section of workers believe that their jobs are indispensable and there is a shortage of supply of their type of workers. Rigidity of this system affect the relative variability of wages and prices. This may lead to resource misallocation.

Peace-time wage-price controls have been deployed in North European countries as well as the USA. They have been effective only in the former, though for a short period of time. Voluntary wage-price guidelines in those countries mentioned above showed some moderate success for a short period of time. They became ineffective and inequitable when expansionary fiscal and monetary policies were adopted. Many economists argued for deregulation of regulated industries, strengthening competition, banning all sorts of collusion to control prices and wages as such policies may increase the resistance to price and wage increases. On the other hand tax based income policies prescribe fiscal incentives for firms and industries whose wages and prices rise slowly and fiscal penalties for those whose wages and prices rise fast.

Reducing natural Rate of Unemployment

An altogether different approach would be to reduce natural rate of unemployment [also called non-accelerating inflation rate of unemployment (NAIRU)] itself instead of sacrificing some employment for a period of uncertain length for attaining price stability. The so called natural rate of unemployment is neither a natural or static concept nor it is necessarily socially desirable. It varies over time with demographic change, occupational composition of different sections of population, mobility of individuals, access to information and kinds of external shock. The natural unemployment rate is likely to be higher than optimum rate of unemployment.

Through improving the access to information and supply of information frictional and structural unemployment can be reduced. A close cooperation and liasion between skill training institutes, employers and job seekers would reduce unemployment rate. Government may overprotect the unemployed people form hardship of unemployment and reduce their effort level to look for appropriate job. This should be avoided.

Concepts for Review

CPI Anticipated Inflation
PII Unanticipated Inflation
GDP Implicit Deflator Shoe Leather Cost

Moderate Inflation Inflation Tax

Galloping Inflation Menu Costs of Inflation
Hyper Inflation Capital Intensity Effect

Adaptive Expectation Fiscal Drag
Rational expectation Bracket Drift
Demand-Pul Inflation Phillips Curve

Cost-Push Inflation Trade-off between price Validation of Inflation Stability & unemployment

Wage-Price Spring Recessionary Cure
Price and Income Policy

Short Questions

- a. Why can we not explain the phenomenon of inflation in an ambiguous manner?
- b. How does inflation affect the desire to hold nominal balances?
- c. How do economies survive or even prosper during hype inflation?
- d. How is GDP implicit deflator used to measure rate of inflation?
- e. Present briefly the theoretical basis of Price Phillips Curve.
- f. Find the similarity and difference between cost-push and demand-pull inflation.
- g. What is meant by show leather cost?
- h. What do we mean by inflation tax? Who loses and who gain in this situation?
- i. How would you describe Price Phillips curve from Wage Phillips curve?
- j. How does recessionary curve for inflation work?
- k. Why is Price Phillips curve vertical in the long run?
- 1. How can natural rate of unemployment be reduced?
- m. How can price and income policy be used to control inflation?
- n. Describe circumstances leading to Cost-Push inflation.
- o. What is the impact of inflation on savers, borrowers and lenders?
- p. How does Demand-Pull inflation occur?
- q. State the impact of inflation on investment.

Unit Highlights

- > Definition and types of inf
- > Definition and types of inf
- Definition of money
- > Determinants of money supply
- > Deposit expansion by Commercial Banks
- > Money supply process in Bangladesh
- > Demand for maoney
- > Impact of money on output

Technologies Used for Content Delivery

- **❖** BOUTUBE
- ❖ BOU LMS
- **❖** WebTV
- Web Radio
- ❖ Mobile Technology with MicroSD Card
- ❖ LP+ Office 365
- **❖** BTV Program
- Bangladesh Betar Program

Lesson 1: Money and Monetary Aggregate

After studying this lesson, you will be able to

- What is money and what services money renders
- ➤ Different types of monetary aggregates
- > Factors that affect money supply
- > The process of multiple expansion of deposits in commercial banks
- ➤ Money supply process in Bangladesh

What is Money?

Anything that is generally accepted as a means of payment would qualify as money. Convention and the prevailing stage of economic development determine what would be regarded as money in a society. Money performs some basic functions: (1) it serves as a medium of exchange, (2) it is used as a store of value, (3) it serves as a unit of account and (4) it is a standard of deferred payment. For a society at a point of time fully developed money is that which, apart from being generally accepted as a means of payment, performs all those four functions. Being generally acceptable to all sellers who offer goods or services, money eliminate the problem of lack of double coincidence and difficulties of apportioning a unit of a good or service frequently met in a barter economy. A large variety of goods has served as a medium of exchange in different societies at different times. Money performs better as a medium of exchange when it has the following characteristics: (1) it is readily recognizable and acceptable, (2) it has a high value for its weight and volume, (3) it is divisible, and (4) it cannot easily be forged.

Money becomes a unit of account or standard of value as the magnitude of price of each commodity is expressed in terms of money- the medium of exchange. We need not remember relative price of one commodity in terms of each of the remaining commodities for the purpose of exchange – we need to know only the absolute prices of each of the commodities in terms of money.

We express the amount that has to be paid in future for present borrowing or purchase, in terms of money. A person can sell goods and services for money and save the whole or a part of that money to use later for buying goods and services. Money performs all those function in a better way if the general price level remains stable. Of all the four functions stated above, serving as a medium of exchange is the essential function – since money is universally accepted medium of exchange. Other three functions can be performed by other physical or financial assets – but such assets they do not have general acceptability in normal circumstances.

Types of Monetary Aggregates

Money is also construed to be an asset rendering some services in the sense that it saves time and resources for the holder of money. From the accounting point of view an asset gives its holders a claim and it implies an equivalent amount of liabilities for those against whom the claim is made. Notes are assets for the holders but they are liabilities of the central bank. Notes make the common component of money supply in many countries – same is the case with demand deposits (bearing no interest) which are assets to the depositors but liabilities to the commercial banks. Depositors write cheques against the deposits to settle accounts. While in some countries cheques (drawn against whatever type of deposit) are not generally accepted as a means of payment in some countries, money can be more readily withdrawn through writing of cheques, cash-on-line system or electronic transfer of funds from different type of deposits. Thus operationally, money can be defined as those liabilities of the central bank and of financial institutions (which may be privately owned), which people hold in order to obtain the services that money performs. Any liability of the central Book or financial institutions, which can be used as means of payment in

exchange for goods and services or can be converted into medium of exchange rapidly enough with minimum of transaction cost and danger of loss of capital value qualifies to be called money. But such liabilities truly become money if people use them quite frequently for significant volume of transactions. As types of liabilities and pattern of use of such liabilities change over time the operational definition of money and money supply also changes.

For some countries money supply means only supply of notes and coins. In Bangladesh one taka notes and coins of different nominations are issued by the government. Notes of higher denominations are issued by Bangladesh Bank, the central bank of Bangladesh. These notes represent liability of Bangladesh Bank. In some countries including Bangladesh there still prevail some non-monetised sectors or activities. The most widely used measure of money is narrow money, M-1 which includes currency (notes and coins) held by public and non-interest bearing current or demand deposits of non-bank public in commercial banks. Cheques drawn against those deposits are not money. They represent devices by which a transfer of a specific amount of money is made from the demand deposit of one party (an individual or a firm or government) to another party. For many years, currency and commercial bank demand deposits held by the public were the only assets that qualified as money according to narrow definition of money, M-1. In the 1970s some new type of accounts emerged in the financial institutions of the USA. Since 1980 M-1 has been renamed as M-1A. Deposits in Negotiable Order of Withdrawal Accounts (NOW accounts) at savings and loan associations and commercial banks, Automatic Transfer Service from savings to demand deposits account (ATS account), Credit Union Share Draft accounts, and Demand Deposits Accounts at mutual savings banks are now added to M-1A derive a broader concept of money supply called M-1B. Cheques can be drawn against those accounts either directly or indirectly. Still broader money supply, M-2 is obtained by adding savings deposits, small denomination (less than \$100,000) time deposits, overnight eurodollars, money market deposit accounts, overnight purchase agreements and money market neutral funds to M-1B. Another money stock measure, M-3 is obtained by adding to M-2 several other items, the most important of them being large denomination (\$100,000 or more) deposits at all depository institutions. In industrially advanced countries when one refers to the money supply without qualification, the M-1B concept of money supply is usually understood. But the growth of money market funds has blurred the distinction between M-1B and M-2.

In Bangladesh M-1 includes notes and coins in circulation and demand deposits. M-2 in Bangladesh is obtained by adding savings deposits and time deposits to M-1.

Supply of Money and Credit:

Determinants of Money Supply

In analyzing process and growth of money supply we will mostly stick to the concept of M-1A (previously called M-1). This is done partly for the sake of convenience. But it is essential that we pay attention to what is happenings to other measures of money supply i,e. M-1B, M-2 or M-3 in the context developed capitalist countries. For most of the countries especially the developing ones, we should only consider what is happening to M-1A.

We may recall that according to the narrow definition of money supply (referred to as M-1 or M-1A) the money supply (from now onward this will be represented by M unless we move to a broader definition of money supply) is represented by equation(1).

$M=Cpub+Dpub \dots \dots \dots \dots \dots (1)$
Where Cpub=h.M (2)
Dpub=(1-h).M
Furthermore,
RRe=z. Dpub=z.(1-h).M (4)

Below we show what the symbols used above stand for:

- a) M=Money supply (narrow definition)
- b) Cpub= Currency held by public . Currency in bank vaults of commercial banks or central bank is not included. Notes and coins issued by government and Central Bank and held by the public are included.
- c) Dpub= Demand deposits held by public in the commercial banks.
- d) h = proportion of M held in the form of currency (notes & coins) by the public.
- e) (1-h) = proportion of M held in the form of deposit in commercial banks.
- f) z = proportion of demand deposits which must be kept in The Central bank by commercial banks and deposits
- g) RRe = Amount of deposit which must be kept as reserve in The Central bank by commercial banks.

Equations (2) and (3) respectively shows that (i) currency held by the public is h times M, and (ii) demand deposits held by public is (1-h) times M. Equation (4) shows amount of deposits held by public, which must be kept as reserve in central bank by commercial banks, RRe as a proportion of Dpub or as a proportion of M (narrow definition)

Amount of reserves provided by a Central bank includes two types of reserves: un-borrowed reserves (RU) and borrowed reserves (RB). Central bank provides RU through buying of securities issued by the government in the open market, while RB is provided through lending by the central bank to commercial banks by discounting bills of exchange at its disposal. These reserves are, however, used up in the following manner: Banks keep certain portion of the reserves obtained as required reserves (RRe), excess reserve, REx, and some of the RU will end up as currency in the hands of the public, Cpub. Hence we can write the following identity:

```
RU+RB = R = RRe+REx+Cpub \dots (5)
where R is total reserve.
```

Rearranging (5) we get an expression for unborrowed reserve, RU provided by the central bank:

$$RU = RRe + REx - RB + Cpub \dots (6)$$
Or
$$RU = RRe + RF + Cpub \dots (7)$$
where RF is net free reserve.

We use equation (2) for Cpub and equation (4) for RRe in (7) to obtain the following expression of RU:

```
RU = z.(1-h).M + RF + h.M ... (8)
```

Solving equation (8) for M we derive, through rearranging the resulting denominator,

$$M = [RU - RF] / [h + z(1-h)] (9a)$$

 $M = [RU - RF] / [z + h(1-z)] (9b)$

Or

As is evident from (9b), $(\partial M) / \partial RU > 0$. Both the partial derivatives, $(\partial M) / (\partial RF)$ and $(\partial M) / (\partial h)$ are negative. $\partial M / \partial z$ is negative too. Note that RU>RF, h>0, z<1, (h-hz)>0 and (z-h.z)>0.

If the central bank wants to increase the money supply it may increase RU through purchase of government securities from commercial banks. Commercial banks may, in order to make new loans and create new deposits, sell such securities if it does not have any excess reserve or if wants to lend a bigger amount and create deposits more than its excess reserve permits. The same purpose of the central bank is served if (1) it lowers discount rate so that RB increases and RF falls provided that REx lowers, or remains constant or does not rise as much as RB rises; and (2) central bank lowers z so that commercial banks can lend more to the public and create demand deposits if it is willing to do so. On the other hand, commercial banks and non-bank public together, on their own, can expand money supply through (1) public's having greater preference for demand deposits vis-a-vis cash in hand, and (2) drawing down free reserve (RF) either through using excess reserve or borrowing more from the central bank through having their bills of exchange discounted by the central bank. So measures taken by one party (central bank or

commercial banks or non-bank public) to change money supply can be supported or resisted by the other for their own reasons. So money supply cannot be treated as a purely exogenous phenomenon.

Multiple Expansion of Deposits by Commercial Banks

Commercial banking system, as a whole, along with the central bank can create deposits a few times greater than the initial dose of deposits kept with it.

Suppose the Central Bank buys Tk. 1000 worth of government bonds from an individual X. The central bank pays the individual by issuing a cheque drawn on the central bank for Tk.1000. The seller deposits the cheque in his/her checking account at commercial bank A. His/her deposit with A increases by Tk. 1000 and the commercial bank's liability to public increases by Tk. 1000 also. A's deposit with the central bank increases by Tk. 1000 also. If legal reserve ratio is 20% bank A can lend Tk. 800 to another individual and credit the amount to the borrower's deposit account on which the borrower can write cheques. Suppose this new borrower deposits his/her cheque in the account of a new bank B. So his/her deposit with B will increase by Tk. 800 and, up to this point, deposit in commercial banks will rise by Tk. 1000 + 800. What was done by bank A can be repeated by bank B who may lend Tk. 640 to still another person. This action may end up by increase of deposit by Tk. 640 held by still another bank C. This process may continue if no borrower uses cheques and cash to meet transaction demand. Deposits created in successive rounds are Tk. 1000, 800, 640, 512, The sum of these deposits would be 1000X[1-

(4/5)ⁿ]/[1-(4/5)] where n represents number of rounds. If n is sufficiently large, sum of created deposits would be Tk. 5000 which is five times the proceeds obtained from sale of government securities. Expansion of credit to such a scale, off course, depends upon some stringent conditions:

- (1) There should not be any excess reserve at any point,
- (2) The borrowers should always use cheques and whoever receives payment in cheques from the borrower also uses cheques for transaction purposes so that there is no leakage in favour of currency,
- (3) While 20% of the new deposit is kept as legal reserve all of the remaining 80% of the deposit would be used to lend to private borrowers,
- (4) There are people willing to borrow money from the commercial bank at the prevailing rate of interest, and
- (5) The central bank would not change the reserve ratio requirement.

Money Supply Process in Bangladesh

The monetary authorities (Bangladesh Bank and Scheduled Banks) in Bangladesh use the following balance sheet approach to obtain so called monetary aggregate, M-2 [cash in circulation (C) + demand deposit (D) + time deposits (T)]

The balance sheet identity for Bangladesh Bank is:

where $DC^{bb} = CG^{bb} + Cpub^{bb}$; and that for scheduled bank is

$$NFA^{sb} + DC^{sb} + OA^{sb} = D + T \dots (2)$$

$$\label{eq:where} where \quad \mathrm{DC}^{sb} = \mathrm{CG}^{sb} + \mathrm{Cpub}^{sb} + \mathrm{Cpr}^{sb}$$

Putting together (1) and (2) we get the identity for so called M-2

$$NFA + NDA = C + D + T = M-2$$

Symbols used above represent the following:

NFA=Net foreign asset, bb=Bangladesh Bank, DC= Domestic Credit, OA= Other assets, CG = Credit to Government, Cpub= Credit to Public Sector, Cpr= Credit to Private Sector, and sb= Scheduled Banks.

In the current decade credit to private sector plays the most important role in contributing to money supply followed by net foreign assets, credit to public sector and credit to government. During 1997/98 credit to private sector, credit to government, net foreign asset and credit to public sector contributed about 72%, 17%, 12% and 11% of M-2. Net other assets was negative. In absolute terms it comprised about 12% of M-2. Credit to government and public sector together account for 28% of M-2. in the 1970s and early 1980s (1972/73-1982/83) loans to public sector was most important followed by loans to government and loans to private sector. Net foreign assets and net other assets were negative during that period.

Lesson 2: Demand, Impact and Role of Money in Economy

After studying this lesson, you will be able to

- ➤ Purposes of holding money and determinants of demand for money held for different purposes
- Impact of money on output in different situations
- ➤ Views of different schools of economists including the monetarists on the role of money in economy

Demand for Money

Transaction demand, precautionay demand and speculative demand for money together constitute total demand for money.

Transaction Demand for Money

Transaction demand for money arises due to lack of synchronization between income receipts and expenditure payments. Households and firms are assumed to know precisely the amount and timing of such receipts and payments. If all transactions were certain and perfectly synchronized there would be no need to hold money for transaction purposes. A person (or firm) receiving his (its) income would spend the income immediately so that need for transaction balance would not arise. Even in the case of non-synchronization, people could have used assets which are close substitutes of money, to meet the transaction demand had such assets been costlessly and instantaneouly convertible into money.

Transaction demand for money, as is obvious, is positively related with level of income. A person (or an economy) with higher level of income (GNP or GDP) will have higher level of transaction balance. Reduction of length of pay period, other things remaining the same, reduces the transaction balance as apportion nominal GNP or GDP. Higher degree of business integration (horizontal or vertical) will also reduce the demand for transaction balance. People may keep a part of the amount of money which they require for transaction in a period in the form of interest bearing asset. Some transaction, for instance, occur during the first quarter, some during the second quarter, some during the third and some during the fourth quarter of the pay period. A person may improve his lot or reduce the cost due to foregone return form income earning assets by keeping a part of the transaction balance in the form of interest bearing liquid assets — such assets can be held for varying span of time ranging from one quarter to three quarters. The individual should not only consider the rate of return on such assets but also the cost of converting these assets into cash while considering the optimum volume of transaction balance and number of sub periods within a pay period. These considerations lead us to square root formulae for optimum transaction balance and number of sub periods in a pay period presented below:

where m_t = optimum transaction balance, b = cost of converting assets into cash, y = income, and r = rate of return on assets, n = number of optimum sub periods.

As shown above both optimum transaction balance and number of sub-perdiods is positively related with income. besides, transaction demand is also poditively related with b and negatively related with r. Equation (1) also shows that as income rises, transaction demand as a proportion of income will keep falling.

Precautionary Demand of Money

Precautionaly demand for money arises when there is uncertainly about the timing and amount of income or receipt, and expenditure. A fixed income earner may face situation like sudden breakdown of some essential consumer durables, incidence of major disease, invitation to a marriage ceremony, death of a close relative etc. A firm may face a sudden slump or a very profitable investment opportunity involving a big fund. The amount of money that households a firms wish to hold as a precaution against such contingencies is called the precautionary demand for money.

A person is in a trade-off situation when he takes decision about how much money should be kept aside to meet precautionary demand. The less money an individual holds, the more likely he or she is to incur the costs of illiquidity. But the more money such a person holds, the more interest he or she is foregoing. The person must strike a balance between this two opposing goals of minimising the cost of illiquidity and the cost due to interest earning foregone.

Expected cost due to precautionary balance can be represented by the following expression

 $EC_{pb} = q(Md_p, u, Y)b + iMd_p \dots \dots (3)$ where $EC_{pb} =$ Expected cost of holding precautionary balance, Md_p in a given period. q is the probability of remaining illiquid and is a function of Md_p, degree of uncertainly as to timing and discrepancy between unforeseen expenditure and receipts, u and level of income, Y. b represents the cost of being lilliquid and i is the market rate of interest. For the sake of convenience i is assumed to remain constant over time. As income rises and there is a greater demand for precautionary balance. As higher precautionary balance is kept, probability of being illiquid declines. Marginal cost of holding precautionary balance is the rate of interest foregone. It is represented by a horizontal straight in a two dimensional space (see figure 9.1) where the horizontal axis represents amount of precautionary balance held and the vertical axis represents both marginal cost and marginal benefit of precautionary balance.

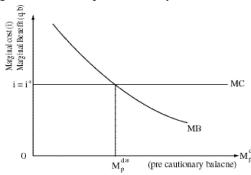


Figure 9.1: Determination of Optimum Precautionary Balance

Marginal benefit from holding precautionary balance is represented by the amount by which expected costs of illiquidity declines as one extra unit of precautionary balance is held. In the figure Marginal Cost Curve, MC (horizontal line) and Marginal Benefit Curve intersect at optimum precautionary balance. Md_n stands for optimum precautionary balance.

The Speculative Demand for Money

Two types of balance mentioned earlier actually highlight the demand for money as a medium of exchange and hence are directly more relevant for M-1A (or M-1 as called earlier in developed countries or still called so in this part of the world). Precautionary demand goes to certain length in explaining part of the saving deposits or other deposits and assets less liquid than demand

deposits. They are part of M-1B or M-2. Speculative demand for money emphasises the store of value function of money. Those deposits and assets have to be considered in determining the speculative demand of money.

Money is a safe asset in the sense that its nominal value is known with certainty. Real value of money balance (i.e real balance) may fall or rise depending on whether general price level rises of falls. An individual who has wealth may hold it in the form of different assets. Return on most assets is uncertain. A prudent risk-averse investor keeps a diversified portfolio of assets ranging from assets with high expected return but high degree of risk as well, to money with zero return under stable prices and no risk.

If risk or aversion to risk increases the demand for safe assets like savings or time deposits will increase while demand for bonds will fall. So there will be a positive impact on M-1B or M-2 rather than on M-1 or M-1A. This happens because returns on those two types of deposits are always greater than return on currency or demand deposits (which is zero) under stable prices while all of them are safe. If returns on bonds increase while risks associated with those remain the same people may reduce the amount deposited in saving or time account and increase bond holding—the outcome will be reduction of M-1B or M-2. If return on deposits other than demand deposits as well as bonds increase, there will be a reduction of M-1 or M-1A. If only income rises while other things remain the same, there is likely to be a positive impact on demand for different types of monetary aggregates as well as non-money assets.

Impact of Money on Output:

Money in Classical Macroeconomic Model

In the classical macroeconomic model money cannot affect real output and employment. Classical model based on the premises of perfect flexibility of prices of goods, services and factors of production, and perfect competition portrays the economy as always operating at full employment or at its potential output level.

Any increase in money supply in such a model will shift the aggregate demand curve to the right. Price level would rise as a consequence but there would be no lasting impact on output or employment as wage will adjust upward so that old real wage as well as output and employment will be restored. Aggregate Supply curve is vertical — so that rightward shift of aggregate demand curve would ultimately raise the prices but not output or employment level as shown in figure 9.2

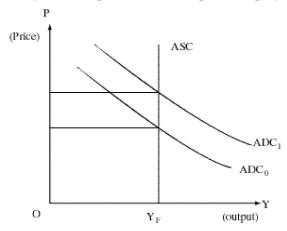


Figure 9.2: Impact of Money Supply on Output.

Money can affect real output and employment if wages are rigid downward. Suppose that wage is not allowed to fall below W₁ either by a decree of government or trade union pressure while a

lower wage level W_0 can clear the labour market. In such a situation the level of real wage and general price level will be higher than that compatible with equilibrium in labour market and money market. There will prevail some involuntary unemployment of magnitude N_1N_2 (see figure 9.3). If money supply is increased, price will rise and equilibrium real wage and full employment output can be achieved.

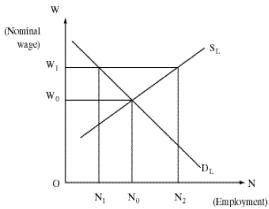


Figure 9.3: Wage Rigidity as a course of low level of Employment and Output

An improvement in the technology may bring about a prospect of higher real wages, employment, output but lower money wages and general price level. Downward rigidity of money wages deprives the economy of higher output and the workers of higher real wage and employment. Through increase of money supply, employment and output can be positively affected in such a situation.

Money in Keynesian Macro-Model

The Keynesian spproach insists on wage-price inflexibility and a flat or positively sloped afggregate supply curve as shown in figure 9.4. An increase in money supply is kikely to shift aggregate demand curve to the right except in a liquidity trap situation. Such a rightward shift causes increases in output and employment alone (in case of a horizontal aggregate supply curve) or accompanied by price rise (in case of a upward sloping supply curve).

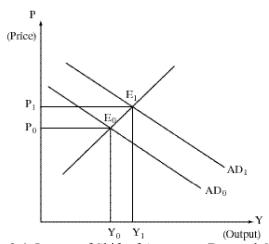


Figure 9.4: Impact of Shift of Aggregate Demand Curve.

Note: Shift of Aggregate Demand Curve may occur due to a host of reasons including change of money supply.

A positively sloped aggregate supply curve permitting increase in output due to increase in money supply, is possible even if wages are flexible. In such a situation it is necessary that actual rate of wage increase (decrease) is exceeded by actual rate of price increase (decrease). Change in money supply is likely to affect output more at a higher level of output and rate of interest as speculative demand for money is highly elastic at low rate of interest.

Monetarists and Others

While monetarists, like Keynesians, lay more emphasis on aggregate demand, they focus money supply as the primary determinant of short run movements in real and nominal aggregate output as well as long run movements in aggregate output. Such importance attached to quantity of money stems mainly from the empirical stability as well as predictability of income velocity of money. While monetarist agree that wages and prices may not be perfectly flexible as Classicalists assumed they also hold the view that such wages and prices are not as rigid as Keynesians think. Hence they come up with an ASC which is much steeper than the ASC based on Keynesian notions. Keynesians prescribe changes in government activities to eliminate instability believed to be usually caused by private sector. Monetarists, on the other hand, hold the view that the private sector, if not interrupted by government is usually stable - rather government actions are responsible for creating fluctions in nominal GNP. From ideological points of view monetarists are adherents to laissez faire or at least, anti-big government policy. Furthermore monetarists believe that money affects output only after long and variable lags. Governments should, hence, be entrusted with the task of using monetary policy for fine tuning the economy. In view of the above mentioned findings and views, monetarists prescribe that government should, as a rule, let the money supply grow at a fixed rate ranging between 3%-5% annually instead of using discretionary policy.

Application of monetarists doctrine in the USA in the 1980s and early 1980s led to, first increasing instability of income velocity of narrow money. As a consequence Federal Reserve Bank of America switched to broad money income velocity which again started deviating from the trend since 1992.

New classical economics shares with monetarists the anti-big government stand but comes up with the result that monetary policy is ineffective to raise output and employment level in the short run, using classical premise of perfect wage-price flexibility and rational expectation hypothesis. Critics of new classical macroeconomic use rational expectation hypothesis along with imperfect competition and argue that prices and wages are inflexible in the short run. The neo Keynesians present various theories like menu costs theory, implicit contract theory, insideroutsider theory and efficiency wage hypothesis to explain wage-price rigidity. They also emphasize the problem of asymmetric information and the consequent market failure. Some economists on the other hand, have pointed out that people may rationally choose not have rational expectations. It costs enormously high in terms of real resources to collect, distill and disseminate information and there are good reasons why the market for information is far from perfect.

Concept for Review

Medium of Exchange Required Reserve
Unit of Account Borrowed Reserve
Store of Value Unborrowed Reserve

Narrow Money Free Reserve Broad Money Excess Reserve

Multiple Expansion of Bank Deposits

Transaction Demand Classical Model
Spectlative Demand Keynesians
Precautionary Demand Monetarists

Real Balances New Classical Economics

Neo Keyesians

Short Questions

- (i) What characteristics does good money possess?
- (ii) Distinguish between M-1, M-1B and M-2.
- (iii) Explain briefly the process of multiple expansion of deposits in commercial banks.
- (iv) Show why transaction demand for money is negatively related with the level of rate of interest.
- (v) Why can we not treat money supply as solely determined by the central bank?
- (vi) How is optimum precautionary balance determined?
- (vii) Examine the impact of increase in risk or risk aversion on speculative demand for money.
- (viii) Why is money found to have no impact on output and employment in the static classical model?
- (ix) What is the shape of Aggregate Supply Curve as envisaged by the Keynesians? Why is the curve vertical in the classical model?
- (x) What make monetarists prescribe that government should, as a rule, let the money supply grow at a fixed rate annually instead of using discretion?
- (xi) Why do Keynesians assign more active role for government in the economy?
- (xii) Find the difference between views held by new classical economists and neo Keynisians with respect to effectiveness of government policy.
- (xiii) Present a brief account of money supply process in Bangladesh.

INTERNATIONAL LINKAGES AND DOMESTIC POLICY

Unit Highlights

- > DEFINITION AND TYPES OF INFLATION
- > THE BASIS OF AND GAINS FROM INTERNATIONAL TRADE
- > CONCEPT OF ABSOLUTE ADVANTAGE AND COMPARATIVE ADVANTAGE
- > BALANCE OF PAYMETS
- > EXCHANGE RATE SYSTEM

Technologies Used for Content Delivery

- **❖** BOUTUBE
- ❖ BOU LMS
- **❖** WebTV
- Web Radio
- ❖ Mobile Technology with MicroSD Card
- ❖ LP+ Office 365
- **❖** BTV Program
- Bangladesh Betar Program

Lesson 1: The basis of trade and balance of payment

After studying this lesson, you will be able to

- ➤ The basis of and gains from international trade
- ➤ The concept of absolute advantage
- > The concept of comparative advantage
- > The concepts of Balance of payment and its different accounts, Deficits and Surplus in different accounts and Overall Balance of Payment Surplus and Deficit.

Introduction

Open economies are engaged in trade of commodities and services with each other. When a country imports it contributes to aggregate demand for goods and services of each of the countries from which goods and services are imported. When a country exports (i.e. other countries import from this country). The export contributes to aggregate demand of goods and services of the country which exports. Earnings from export (foreigners' expenditure on domestic goods and services) are, hence, added to and import expenditure (domestic expenditure on goods and services produced by foreign countries) is subtracted from sum of domestic consumption, investment and government expenditure in order to arrive at the aggregate demand of the goods and service of the home country economy. A change of prices of goods and services produced abroad in terms of domestic currency may affect the trade balance (X-M) of the domestic country even if other things remain the same. Besides, economic relationship between countries includes, other than trade, transfer payments between governments and individuals in different countries and capital flows. Capital flows (out flows) occur when persons and firms in the domestic country acquire financial assets issued by other countries and purchase real assets located in other countries. Capital inflow occurs in the home country when foreigners acquire firencial assets issued in the home country and purchased real assets in the home country. We will first discuss very briefly why trade takes place between two countries and show how free trade has the potential to improve the welfare level of an economy. This is followed by a discussion of Balance of Payments-the record of the transactions of the residents of a country with the rest of the world. Different accounts of balance of payment are introduced. We then explain what are meant by deficit or surplus in different accounts and overall balance of payment deficit or surplus.

Basis of International Trade

The classical theory of international trade is based on labour theory of value. The latter asserts that labour is the only factor of production and that in a closed economy exchange rate between two commodities is determined by the relative amount of labour they embody. Adam smith propounded the principle of Absolute Advantage to explain trade and demonstrate the gains from trade. Suppose that there are two countries, A and B. They are endowed with homogeneous labour and each of them produces tobacco and wine. By employing 1 unit of labour country A produces 2 units of tobacco or 4 units of wine. In country B one unit of labour produces 1 unit of tobacco or 6 units of wine. In country A, in the absence of trade 1 unit of tobacco will be exchanged for 2 units of wine and in country B in the absence of trade 1 unit of tobacco will be exchanged for 6 units of wine. Country A has absolute advantage in the production of tobacco while country B has an absolute advantage in the production of wine. Both the countries may gain if A exports tobacco to B, and B exports wine to A-the rate of exchange between tobacco and wine being anything between 1:2 to 1:6.

We may find as typical the case in which one country is more efficient than the other country in the production of every commodity. David Ricardo put forward the principle of Comparative Advantage to explain trade and its potentially beneficial effect. Let us assume that in country A one unit of labour can produce either 4 units of tobacco or 8 units of wine. In country B one unit

of labour can produce either 1 unit of tobacco or 6 units of wine. Country A has absolute advantage in the production of both the commodities. So the principle of absolute advantage cannot explain trade in this situation. According to Ricardo's principle, country A has comparative advantage in the production of tobacco (and comparative disadvantage in wine production), and country B has comparative advantage in the production of wine (and comparative disadvantage in the production of tobacco). Country A would specialize in the production of tobacco and export tobacco to country B which, on its part, would specialize in the production of wine and export wine to country A. Both the countries may gain if the exchange rate between tobacco and wine is set within the domain 1:2-1:6.

Labour theory has long been discarded as the theory of value as labour is not homogeneous, neither it is the only factor of production. In a closed economy the exchange rates between commodities are determined by demand factors, technical condition as well as market structure. There is a basis for potentially gainful trade for two countries if exchange rate between a pair of commodities differs across the countries in the absence of trade irrespective of the reason (i.e. factor endowment, state of technology, scale of production taste etc.) for such difference.

Balance of Payment

The Balance of Payments of a country is a systematic record of all transactions between the residents of the reporting country and the residents of the world over a specified period of time, usually a year.

The Balance of Payments contains two major accounts: Current and Capital Account. The Current Account records trade in currently produced goods and services, as well as transfer payment. Services include freight, royalty payments and interest payments. It also includes net investment income, the interest and profits on the reporting country's assets (physical and financial) abroad minus the income foreigners earn on the assets they own in the reporting country. Transfer payments, on the other hand, consists of transfers such as gifts and grants. Trade balance refers to only trade in goods while Current Account considers trade in both goods and services and transfer payment to arrive at the Current Account Balance. Total receipts for the sale of currently produced goods and services appear as exports, X and payments of similar goods and services from abroad appear as imports, M in the National Income and Product Accounts. Using the expenditure method we may show the net export term, (X-M) in the GDP identity:

$$GDP = Y = C+I+G+(X-M)=C+S+T+R_f-----(1)$$

Rf in the right most expression represents net transfer payments by foreigners and T,G,S,C and I represent taxes, government expenditure, domestic saving, consumption and investment respectively.

The Capital Account records purchases and sales of assets (both physical and financial) such as stocks, bonds, building, land etc. When the receipts of the reporting country from the sale of such assets exceeds its payments for the purchases of foreign assets, the Capital Account is said to be in surplus and capital inflow occurs. Borrowing abroad gives rise to capital inflow while lending abroad leads to capital outflow.

The Current Account and the Capital Account together must balance. This happens by virtue of the rule that one has to pay for what one purchases. If a country runs a deficit in its Current Account it must have a surplus in the Capital Account. If the country cannot have a surplus in the Capital Account it must balance its Current Account. When a country has deficit in its Current Account it means that this country spends more abroad that it receives from sale to the rest of the world. The deficit needs be financed either by selling assets or by borrowing abroad. Hence it will run a surplus in the Capital Account. Similarly if a country has surplus in the Current Account it would either buy assets or lend money abroad and has a deficit in the Capital Account.

The Capital Accounts can be split into two separate parts: (1) the transactions of the country's private sector, and (2) official reserve transaction which comes under the purview of the Central Bank. When there is Current Account deficit, the reporting country has three options: (1) the private sector can sell its assets or borrow abroad (2) the government can finance the deficit. It may run down its reserve of foreign exchange by selling foreign currency in the foreign exchange market (which lades to capital inflow), and (3) both the first and the second option can be used. Similarly when a country has Current Account Surplus, the private sector of the country may purchase assets and lend abroad and the government may raise its reserve by buying foreign currency in the foreign exchange market (leading to capital outflow). The increase (decrease) in the official exchange reserve is called Overall Balance of Payment Surplus (Deficit).

Overall Balance of Payment Surplus, B = Increase of Official Exchange Reserves = Current Account Surplus + Private Net Capital Inflow, or,

$$B = (X-M) - F - R$$
 -----(2)

where F= Net Private Capital Outflow and R= Net Government and Private transfer.

If both the Current Account and the Private Capital Account are in deficit (surplus) then the overall Balance of Payments is in deficit (surplus). In such a situation the Central Bank would lose (gain) reserve. When both the accounts are in balance or one account is in deficit and the other in surplus and absolute amount of deficit equals absolute amount of surplus the over all balance of payments is zero.

As hinted earlier, exports and imports enter the product market equilibrium condition, the IS equation, X and M do so in about the same say as government purchases or consumption and savings and tax receipts. The trade surplus is believed to be negatively related with income. Under some mobility of capital, inflow of foreign capital is expected to have positive relationship with market rate of interest.

Lesson 2: Exchange rate systems

After studying this lesson, you will be able to

- Systems of Fixed and Flexible Exchange Rate Systems, Nominal and Real Exchange Rates, Devaluation and Depreciation, and Overvaluation and Appreciation.
- Concepts of Internal balance and external balance
- Working of monetary and fiscal policy under Fixed Exchange Rate Regime and Flexible Exchange Rate Regime.

Determination of Exchange Rates:

Fixed Exchange Rates: At Bretton Wood Conference held in 1944, the industrial countries reached a consensus in favour of a fixed exchange rate. They agreed that changes in exchange rates should be made only in cases of fundamental dis-equilibrium. The major countries had fixed exchange rate against one another until 1973.

Under this system central banks are prepared to buy or sell any amount of a foreign currency at the fixed prices or exchange rates. So long as the central bank has the necessary reserves, it can continue to intervene in the foreign exchange markets to keep the exchange rate constant. If the reserve is found to be inadequate, the central bank devalues its currency.

Floating or Flexible Exchange Rate: Huge Current Account Deficit in USA and consequent outflow of US dollars in the early 1970s caused many advanced countries sterilization difficulties and they apprehended that their monetary systems were running out of control. US gold stock shrank as foreign central banks exchanged dollars for gold. This happened at such a big scale that the USA decided to sell gold for dollar. This violated Bretton Wood's tie of the dollar to gold.

The monetary system has seen the major currencies floating since 1973. With the European countries joining the European Monetary System, essentially pegged to the Deutschemark, and smaller countries pegging their currencies to the currency of one or another of the major countries.

Under Flexible Exchange Rate System exchange rate continuously changes along with change in demand and supply situation. The central banks allow the exchange rate to adjust to equate the supply and demand for the foreign currency. Starting from zero BP situation an increase of export of a country to a country, B relative to import from country, B other things remaining the same, will lead to increase to value of A's currency in terms of B's currency. Such a rise of exchange rate is called **appreciation**. Currency of B on the other hand **depreciates**.

National and Real Exchange Rate

Nominal Exchange rate (usually called Exchange rate) of the foreign currency in terms of the domestic currency shows the number of units of domestic currency that one unit of foreign currency can fetch in the foreign exchange market. The real exchange rate is the product of nominal exchange rate and ratio of foreign to domestic prices, measured in the same currency.

Real Exchange Rate = R = e. P_f/P_d -----(3)

where e = exchange rate, $P_f = \text{foreign price}$, and $P_d = \text{domestic price}$.

A rise in real exchange rate means a real depreciation of domestic currency. Such depreciation may occur even if nominal exchange rate remains fixed but inflation occurs in the foreign country whereas prices remain stable at home.

Effectiveness of Domestic Policies in the IS-LM Model in an Open Economy

Goods Market Equilibrium: Spending on domestic goods and services may be construed as composed of two components (a) spending by domestic residents, A[=(C+I+G)] and (b) Net

export, NX [=(X-M)], so that Y=A+NX. A includes domestic spending goods and services produced both within the country and abroad. X represents foreigner's spending on domestic goods and services and M stands for domestic spending on goods and services produced abroad. Thus A+NX represents total spending by domestic residents as well as foreigners for domestic goods and services.

Export is positively related with level of income of foreigners, Y_f and real exchange rate, R. On the other hand, import is positively related with domestic income level and inversely related with real exchange rate, R. Spending by domestic residents, A is positively related with domestic income level, Y and negatively related with level of interest rate, i. Hence we can write

$$Y = A(Y,i) + NX(Y,Y_f,R)$$
----(4)

Where
$$\Box A/\Box Y > 0$$
, $\Box A/\Box i < 0$, $\Box NX/\Box Y < 0$, $\Box NX/\Box Y + 0$ and $\Box NX/\Box R > 0$

An increase in domestic spending will raise domestic level of income and hence import too. Rise of import would cause a rise in foreigners income which, on its turn, would lend to increase of the export of the domestic country. From global point of view this repercussion effect of domestic spending or income rise is significant for big and rich countries having trade relations with a large number of countries.

Balance of Payment Equilibrium Line

To simplify our analysis we assume that the home country faces a given price of imports and a given export demand. We assume perfect mobility of capital as between countries. For the sake of convenience Balance of Payment Surplus, BP is taken to be the sum of trade surplus, NX and Capital Account Surplus, CF:

$$BP = NX (Y,Y_f,R) + CF (i-i_f) - (5)$$

where Y= domestic income level, Y_f = level of income abroad, R= real exchange rate, i= domestic rate of interest and if= rate of interest in foreign capital markets.

An increase in Y worsens trade balance while a rise in i above if improves capital account balance. BP=0 will be horizontal straight line (see figure 11.1) at the level of world interest rate, if by virtue of the perfect mobility of capital. If the domestic interest is above ipvast amount of capital from abroad will flow into the domestic country creating BP surplus. In the opposite case BP deficit would occur.

Internal and External Balance

An open economy has to reducer or eliminate both deficit in Balance of Payment and unemployment. The economy is said to have achieved external balance when it has zero balance of payments. On the other hand, internal balance is achievement when the economy achieves full employment. In certain cases a policy formulated to deal with one problem worsens another problem. These policy dilemmas can be demonstrated with the help of figure 11.1.

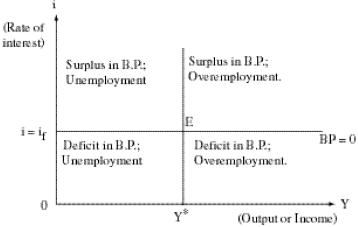


Figure 11.1: External and Internal Balance

In the figure at any point above the horizontal line at the world interest rate, i_f the economy has surplus in the balance of payment, where as, any point below the horizontal line represents deficit in the balance of payments. Let Y* denote the full employment level of output. Any point to the right (left) of the vertical line at Y* represents over employment (underemployment) situation.

At E, the point of intersection between the vertical line at Y* and the horizontal line at if, the economy has both internal and external balance, The two lines divides the (i,Y) space into four quadrants representing different combinations of external and internal balance positions.

Suppose, the economy is in the South-West quadrant and has both deficit in balance of payment and unemployment problem. An expansionary monetary policy may lead the economy to the South-East quadrant characterized by deficit in the balance of payment and over employment. Similarly use of expansionary fiscal policy may push the economy to North-East quadrant where the economy experience surplus in Balance of Payment and over employment. It becomes intuitively clear that both monetary and fiscal policy should be used together to achieve external and internal balance simultaneously. The adjustment following the implementation of a policy and the specific sequence in which fiscal and monetary policies should be used to achieve the dual balance depends upon the exchange rate regime. We will discuss nature of such adjustment and the means to achieve both the balances in Fixed and Flexible Exchange rate regimes. We will continue to assume perfect mobility of capital and constant prices of goods and services.

Fixed Exchange Rate Regime

Under fixed exchange rate regime, given the assumption of perfect mobility of capital, monetary policy cannot work independently. This can be shown by using IS-LM model and BP=0 line (see figure 11.2). Let us assume that economy is initially at P, a point on the straight line along which BP=0. This line also passes through E where we have full employment level of output, Y*. At E we have both internal and external balance.

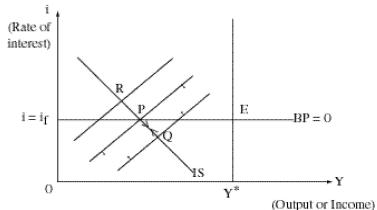


Figure 11.2: Effectiveness of Monetary Policy in a Fixed Exchange Rate Regime

But at P the economy has less than full employment level of output though here the economy has external balance.

Monetary Policy

Suppose now that government increases money supply to cause a rightward shift of LM curve to LM' for reaching Q where employment and output increase. But at Q domestic interest rate will be less than if hence there will be an outflow of capital. There will be a deficit in the balance of payment. Value of local currency will depreciate. The Central Bank must intervene to resist the decline. It will sell foreign money and receive domestic money in exchange. The supply of domestic money thus falls. As a consequence LM curve shifts backward. The process continues until the economy moves back to P. If the response in the capital market is massive and quick central bank is forced to reverse almost immediately after the initial expansion. Similarly when the central bank contracts the money supply and raises the domestic rate of interest above ip it is almost immediately forced to expand money supply to initial level in order to resist the appreciation of domestic currency. In this case LM curve shifts to the left to LM' only to come back to the original position in subsequent periods.

Fiscal Policy

In a fixed exchange rate regime government can use expansionary fiscal policy to reduce unemployment. A rightward shift of IS curve to IS' will move the economy from point P to point S (see figure 11.3). Both interest rate and level of output in the home country rise. The higher interest rate induced a capital inflow and appreciation of exchange rate.

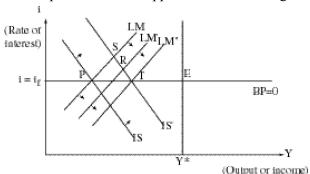


Figure 11.3: Effectiveness of Fiscal Policy in a Flexible Exchange Rate Regime.

To reverse the appreciation the central bank has to expand money supply, thus shifting LM curve, rightward. If the new curve, LM' intersects IS' at any point R above the horizontal line at i_f, the surplus will remain and the home currency will appreciate. The Central Bank has to expand money supply further to reach point T.

Flexible Exchange Rate Regime

In Fixed Exchange rate regime, the commitment of the government to maintain a fixed exchange rate makes the money stock endogenous- the central banks cannot pursue an independent monetary policy.

Under flexible exchange rates the Central Bank does not intervene in the foreign exchange market. The exchange rate adjusts itself to bring about equality between demand and supply of foreign exchange which usually change over time. Any current account deficit will be financed by capital inflows while surplus in current account is balanced by capital outflows. Adjustments in the exchange rate ensure zero balance of payment i.e. zero sum of the current and capital accounts. Besides, in such a regime the central bank can set the money stock at will.

But, as under the fixed exchange rate, there is only one interest rate if at which balance of payment balances. If domestic market rate of interest is above i_f , there will be capital inflow, the local currency appreciates causing IS curve shifts leftward. In a situation where i<if capital outflow occurs leading to depreciation of home currency and subsequently to rightward shift of IS curve. See figure 11.4.

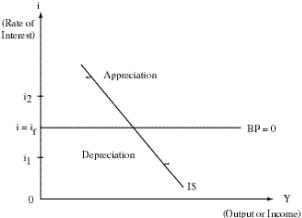


Figure 11.4: Shift of IS Curve in Flexible Exchange Rate Regime.

When the home currency appreciates export will decline and import will increase. The reverse happens when home currency depreciates.

Impact of an Increase in Foreign Demand for Domestic Goods and Services

Suppose the economy is initially at P where the economy has zero balance of payment and there is equilibrium in both goods market and service market. At the initial interest rate, exchange rate and output level, increase in foreign demand leads the economy to Q through rightward shift of Is₀ to IS₁ (see figure 11.5). At Q with domestic interest rate higher than i_f home currency appreciates due to capital inflow.

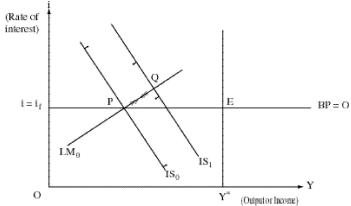


Figure 11.5: Effectiveness of Fiscal Policy in Flexible Exchange Rate Regime

This causes the IS curve shift backward to the original position and the economy to the initial point P. In fact the economy may not even reach Q-any tendency to move in that direction brings about a rise in the value of domestic currency (due to interest rate rise). Similar outcome occurs when reduction of tax rate or increase in government expenditure causes IS curve to initially shift to the right.

Fiscal Policy

As was the case with increase to foreign spending, expansionary fiscal policy cannot affect equilibrium level of output and employment under flexible exchange rate with perfect capital mobility.

Monetary Policy

An expansionary monetary policy may affect the equilibrium level of output, income and employment. If the central bank increases the money supply then the LM curve shifts rightward to LM' (see figure 11.6).

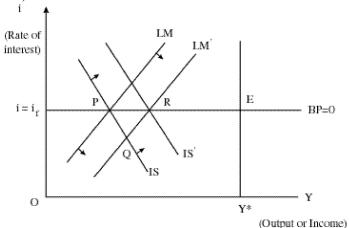


Figure 11.6: Effectiveness of Monetary Policy in Flexible Exchange Rate Regime

At Q, the new point of intersection between IS and LM', i<if and home currency depreciates. This causes the IS curve shift rightward to IS' as exports increase and imports are discouraged. The economy thus moves to new equilibrium point R where domestic interest rate is again equal to world interest rate.

The economy has zero balance of payment. But the economy has higher level of income and output.

Concepts of Review:

Absolute Advantage Devaluation
Comparative Advantage Depreciation
Balance of Payment Appreciation

Current Account Nominal Exchange Rate
Capital Account Real Exchange Rate

Surplus and Deficit Balance of Payment Equilibrium Line

Fixed Exchange Rate Internal Balance Flexible Exchange Rate External Balance

Answer briefly the following

- (i) What factors can be accounted for the variation of exchange rate between two commodity across countries?
- (ii) What are the limitations of the principal of Absolute advantage in explaining trade between two countries?
- (iii) Why should the Current and Capital Account together must balance?
- (iv) What is meant by Overall Balance of Payment Surplus or Deficit? What situations does Bangladesh face in connection with (a) Current Account, (b) Capital Account, and (c) Overall balance of Bangladesh?
- (v) What role remittance of Bangladesh from abroad and foreign assistance play in Balance of Payment of Bangladesh?
- (vi) When does the central of a country devalue the currency in Fixed Exchange Rate regime?
- (vii) When does the domestic currency appreciate or depreciate?
- (viii) What are meant by Internal Balance and External Balance?
- (ix) What are the determinations of trade surplus (X-M) and capital account surplus?
- (x) In what circumstance Balance of Payment Equilibrium (Zero surplus or deficit) line would be horizontal and why?
- (xi) Consider an Open Economy. Assume the Capital is perfectly mobile.
 - (a) Show that monetary policy is not effective in raising the level of output and employment in fixed exchange rate regime.
 - (b) Show that fiscal policy is not effective in raising the equilibrium level of output and employment in a flexible exchange rate regime.