B.Com./B.A.(Programme) II Year Economics

PAPER : X / Discipline Course

MACRO ECONOMICS

Study Material : 1 (1-9)

SCHOOL OF OPEN LEARNING
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Graduate Course

Micro Economics

Contents

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LESSON 1

NATIONAL INCOME DETERMINATION

Introduction : From Micro to Macro Economics

The second part of Paper I i.e. 'Micro Economics' was concerned with the pricing of individual commodities and factors of production. In that part, we studied the behaviour of an individual consumer and an individual producer. We were not concerned with what was happening to the total output of the economy which was taken as given. Our object in Micro Economics was to study the distribution of a given volume of resources among various uses in accordance with the variations in the relative prices of various commodities and factors of production. The kinds of questions we tried to answer were : How much of a certain commodity will be produced and at what price will it sell ? Why is commodity X priced higher than commodity Y? How will the value of a factor be determined in the market ? Which factors will determine its transfer from one area of production to the other ? These problems pertain typically to the realm of micro economics, the branch of economic theory which studies behaviour of individual markets and individual economic units.

In what follows, we are going to study 'Macro Economics'. Literally 'micro' in Greek means small and 'macro' means large. So micro-economics is 'economics of the small (say one single unit) while macro economics is 'economics of the large' (the economy as a whole). In macro economics, we study (1) the determination of the income and employment levels for the economy as a whole and also fluctuations in these levels and (2) determination of and fluctuations in the general level of prices. In other words, macro economics deals with broad aggregates and averages rather than detailed study of individual market and relative prices.

It is necessary to emphasize here that the distinction between micro and macro variables cannot always be rigid and the two have to be understood in a relative sense. For instance, output of an industry will be a macro variable looked at from the view point of a single firm in the industry, but the same will be a micro variable when seen with reference to the total output of the economy. The two variables (micro and macro), in fact, represent different degrees of aggregation and their classification as micro or macro can only be with reference to the specific variables or situations in question.

SELF–CHECK EXERCISE

Remember that the study of the whole (e.g. aggregate output, employment, industry versus firm, general price-level versus a single price, etc.) is Macro whereas study of a part of the whole (e.g. a firm, a consumer, an industry versus the economy, output of a crop versus total agricultural output) is Micro study.

II

The Context

It is important to understand the context in which Keynes wrote his 'General Theory of Employment, Interest and Money.' Prior to the Great Depression of 1930's, the prevalent economic theory held that the capitalist economy, while it misbehaved occasionally, had an inbuilt tendency

to cure deviations from its norm of working at the full employment level. The famous Say's Law of Markets' that 'supply creates its own demand' was the proverbial expression of the deep-rooted belief that whatever the quantity of output produced, it would always generate an equal amount of demand to buy it. Therefore, the economy will always produce the maximum amount of output it can. In other words, the economy will always work at full-employment level.

However, the events of the 30's completely shattered this belief and forced economists to think afresh. The situation during the decade 1930-39 was so horrible that in U.S.A., on average, output produced was just 75% of the potential output (i.e. a shortfall of 25%), unemployment level was 20% and the general level of prices fell sharply. The problem of the decade was low production on an unprecedented scale. During the worst year of the decade (1933), production in U.S.A. was only 64% of the potential output, (meaning that the economy could produce 56% more if it utilized its capacity fully), price-level was 25% below the 1929 level, business investment ceased almost completely (even worn out capital goods were not being replaced), short term rates of interest were close to zero and stock market values crashed to less than one sixth of their 1929 level. Suppliers were more than willing to supply any amount, but due to acute lack of demand, the system was condemned to work much below capacity. The prevailing economic theory failed to explain as to how and why aggregate demand for goods and services could fall short of their aggregate supply.

It was against this background that Keynes published his famous book in 1936 in which he straightaway rejected the prevailing notion and asserted that there was nothing inherent in the capitalist system that always guaranteed generation of sufficient demand to absorb the full-employment level of output. Consequently, for lack of adequate demand, the economy could settle down at any level of employment, output, income etc.

The problem of income determination in the following pages is posed in the above context. The pertinent questions are : Why is it that sometimes the economy works far below its productive capacity, while on other occasions, it tends to overstretch itself ? How can these cyclical tendencies be fought against so that the economy is able to put its existing capacity to proper use without there being inflation or depression ?

SELF–CHECK EXERCISE

Carefully note that Say's Law of markets essentially meant that production of output always created an equal amount of demand so that the question of total output being less than the maximum possible was ruled out. However, the events of the 1930's disproved this theory. Keynes proved that due to deficient aggregate demand, aggregate output would be less than the maximum possible.

III

Assumptions and Their Implications

In order to pinpoint the basic determinants of output, we start with an extremely simple model and then proceed to take on complications one by one. ***We begin by making the basic assumption that there is enough excess capacity in the economy in the form of unemployment of all the relevant resources.*** The problem is to make the economy work at such a level as to utilise the existing

capacity fully. In this framework, output in the system will rise or fall with aggregate demand. If output rises or falls in the same proportion as the demand for it, prices will evidently remain constant. *The problem of variations in the general level of prices will be considered after we have discussed the basic mechanics of income determination.*

Business firms plan production on the basis of estimates regarding future demand. But very often these estimates are not realised. Sometimes actual demand may turn out to be more than the expected demand while at other times it may fall short of the same. If business firms do not maintain adequate stocks to absort such unexpected fluctuations in demand, prices will vary. But we have assumed that business firms are willing to supply any amount of goods at the prevailing prices. Therefore, in keeping with this assumption, we also assume that business firms maintain adequate stocks to meet unexpected fluctuations in demand so that prices remain constant. If actual demand turns out to be more than expected, they will meet the excess demand from their stocks and replenish them by producing more in the subsequent period. On the other hand, if actual demand falls short of what was expected, the unsold goods will be added to stocks which will be brought to their normal level by producing less in the subsequent period. And if actual demand turns out to be exactly equal to what was expected, there will be no unexpected addition to or withdrawal from business stocks. We call these unexpected (unwanted or forced) additions to or withdrawals from business stocks as unplanned investment or unplanned disinvestment to distinguish them from planned investment and disinvestment which business firms undertake deliberately with a view to meeting future demand. It may mean acquiring new capital goods, or adding to business inventories (stocks) or replacing worn out capital goods. This type of investment is called *planned* or *intended* or *desired* or *ex ante* investment. However, in business terminology, no distinction is made between planned and unplanned (or forced) types of investment and both are clubbed together under the heading 'realised' (or ex post) or actual investment. This is the concept which is used in the measurement of national income.

It must be very carefully noted that investment in the accounting sense (i.e., realised, ex post or actual) conceals the important fact that while planned investment has a positive effect on income-generation, unplanned investment has exactly the opposite effect. While the concept of planned (desired, intended or ex ante) concept of investment/disinvestment refers to business firms' estimated demand for capital goods on the basis of which they undertake production, the realised or ex post concept refers to the end result of a production period which is very often different from what was planned because of wrong estimation of demand. One concept refers to plan or intentions while the other refers to the realised results. It should be kept in mind that in the context of the theory of income-determination, the distinction between the concepts of planned and unplanned investment and saving is of crucial importance.

We also assume that our simple economy is a closed one in the sense that it has no economic relations with other countries. We shall introduce foreign trade in our analysis in sub-section XI

SELF–CHECK EXERCISE

Remember that unforeseen changes in stocks are called unplanned/unintended /undesired/ realised or ex post investment/disinvestment whereas planned or desired changes in stocks are called planned/intended/ex ante investment. To a business accountant, investment is investment, whether planned or unplanned.

III

The Circular Flow of Income

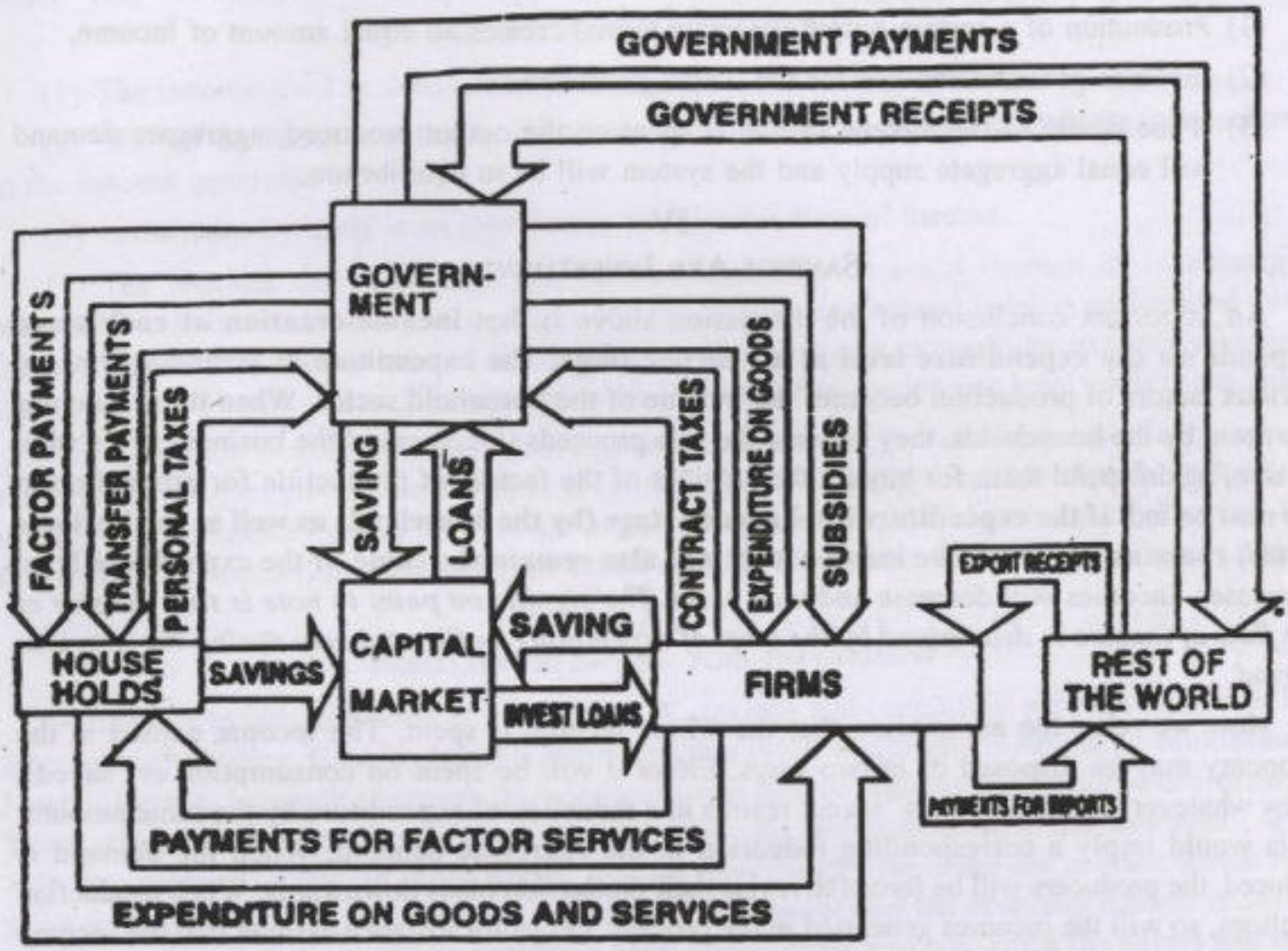
If we want to understand the process of income generation, we will have to study the 'circular flow of income' and the various steps thereof which illustrate as to how income is created and how it is disposed of. For this purpose, let us assume a simple economy with only two sectors, viz the household sector and the business sector. The household sector supplies the productive services, receives remuneration for these services and spends the income thus received to consume the output produced in the economy. The business sector on the other hand is engaged in the process of production. It employs the various factors of production–land, labour, capital and entrepreneurship. These factors have to be paid according to their contributions to production in the from of rent (for land), wages (for labour), interest (for capital) and profit (for entrepreneurship). Whatever is paid out in this process appears as cost to the producers who employ the various factors of production while the same accrues as income to the factors and the households supplying those factors. Thus the expenditure of the business sector appears as incomes of the factors of production. Since the total amount of factor remunerations (i.e., rent, wages, interest and profit) is nothing other than the cost of production of the output, the factor incomes must add up to the total value of the output produced. Hence we can say :

Any amount of the output produced (in value terms) creates an equal amount of income in the economy. The sum of the incomes of various factors of production is the cost of production of output produced.

Once the incomes are created and these accrue to the owners of the respective factors of production in the household sector, they tend to spend them on various kinds of goods and services produced by the business sector. Whatever is spent in buying these goods and services accrues to the producers of these goods and services in the business sector as their revenue. The business sector will, in turn, spend their receipts in buying productive services from the household sector to use these again in the process of production. Again incomes are generated which are then spent on buying goods and services by the household sector and come back to the business sector in the form of its revenue. This circular flow goes on and on period after period.

At this point, it must be stated clearly that the distinction between the household sector and the business sector is only a conceptual one, to distinguish between their respective functions (i.e. consumption and production). A person belongs to the household sector when he supplies his labour to the producers or consumes various goods and services. The same person belongs to the business sector when he runs a business and organises the process of production by hiring various factors of production.

You must have understood by now that the total income generated in the process of hiring the factors of production is equal to the total value of the output produced. Now if the whole of this income is spent by the household sector in buying the output produced, the expenditure of the household sector on goods and services will also be equal to the value of the output produced by the business sector which will be able to recover its cost of production by selling the total output. **In this situation, the aggregate demand as represented by the total spending in the**


GOVERNMENT PAYMENTS
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SAVING
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EXPORT RECEIPTS
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CAPITAL
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FIRMS
REST OF
THE WORLD
PAYMENTS FOR IMPORTS
PAYMENTS FOR FACTOR SERVICES
EXPENDITURE ON GOODS AND SERVICES

system will be just equal to the aggregate supply as represented by the value of the total output. When such a situation obtains, the producers feel satisfied with their production plans and continue production at the same level period after period and the system will be in equilibrium.

Thus the circular flow is complete. Production creates income, income leads to spending and spending calls forth production again. For the economy to be in equilibrium, all the three aspects of the circular flow must balance so that the same process gets repeated period after period at the same level.

SELF–CHECK EXERCISES

Review your understanding of the following points made in the preceding section.

(1) Production of a certain output (in value terms) creates an equal amount of income.

(2) Incomes generate demand for the output produced.

(3) If the whole of the income earned is spent on the output produced, aggregate demand will equal aggregate supply and the system will be in equilibrium.

IV

Savings And Investment

An important conclusion of the discussion above is that **income-creation at each stage depends on the expenditure level at an earlier stage.** The expenditure of business firms on various factors of production becomes the income of the household sector. When these incomes are spent by the households, they become the sale proceeds (incomes) of the business firms who, in turn, again spend them for buying the services of the factors of production for production in the next period. **If the expenditure level at each stage (by the households as well as the business firms) remains the same, the income level will also remain the same.** If the expenditure level decreases, incomes will decrease and vice varsa. *The significant point to note is that the size of the flow of income is determined by the level of expenditure in the economy during the previous period.*

Now we relax the assumption that the whole income is spent. The income earned in the economy may be disposed of in two ways. Either it will be spent on consumption or 'saved'. Now whatever is not spent or is 'saved' results in a reduction of expenditure by the same amount. This would imply a corresponding reduction in the aggregate demand. When the demand is reduced, the producers will be forced to revise their production plans downwards. When production declines, so will the incomes generated in the process. Let us for instance assume that the income generated in the current period is 100. If in the next period only 90 is spent and 10 is saved, then the income created in the next period will be only 90 and not 100. When expenditure (i.e., demand) is reduced to 90, the producers will also reduce their production and consequently less income will be generated in the process. Thus savings by reducing aggregate demand, reduce the circular flow of income and thus constitute a leakage.

The 'leakage' on account of savings can, however, be made good if an equal amount of investment expenditure takes place. If in the above example, along with savings of 10, there is corresponding investment expenditure of an equal amount, then the reduction in the aggregate

demand due to savings will be exactly made good by an equal increase in investment expenditure. This would lead to expenditure of 100 [i.e., consumption expenditure (=90) + investment expenditure (=10)] and the income level will not fall. If, however, consequent to an increase in saving, investment expenditure occurs but not by as much, then the income level will tend to decline. For instance if in our example, the investment stands only at 5 instead of 10 then the total income generated in the next period will be 95 [i.e., consumption (=90)+investment (=5)] and not 100. If investment happens to be greater than savings, say 20, then the income in the next period will be 110 [i.e., consumption (=90)+investment (=20)] instead of 100 as in the first case. *Thus investment expenditure constitutes an injection in the circular flow of income but it may or may not be equal to the leakage due to saving.*

SELF–CHECK EXERCISES

(1) The income level is determind by the expenditure level in the economy.

(2) 'Saving' by itself, is a 'leakage' from the circular flow of income and results in a decline in the income generated.

(3) Investment by itself is an injection in the circular flow of income.

(4) The leakage due to savings can be made good by an equal amount of investment expenditure. If investment is just equal to savings, aggregate demand level is maintained and income level remains constant and in equilibrium. If investment expenditure exceeds savings, the income level tends to rise. If investment is less than savings, the income level tends to decline.

Note carefully that the equality of savings and investment is just another way of expressing the equality of aggregate demand with aggregate supply. For it simply means that the reduction in aggregate demand caused by savings is just being compensated by an equal increase in investment expenditure, thus restoring the initial equality between aggregate demand and supply.

V

Equality of Saving And Investment

According to our discussion in sub-section IV, savings and investment play a crucial role in income determination. Equality between them indicates that the economy is having an equilibrium level of income. Inequality between them indicates that income is either increasing or decreasing. These statements hold good only when we interpret saving and investment in the *'intended'*, *'ex-ante'* or *'planned'* sense. *In other words, it is an exercise of comparing the amount which the business sector wants to or intends to invest with the amount that the economy intends to save.* If the two are equal, the economy will be in equilibrium, otherwise not. Since the savers and the investors are usually different sets of people, their decisions very often tend to diverge. Thus equality of savings and investment is more an exception than the rule when the two concepts are interpreted in the intended or 'planned' or 'ex-ante' sense.

As explained earlier, there is another interpretation of saving and investment such that they are always equal, *equilibrium or no equilibrium.* This will happen when we interpret the terms in the 'realised' or 'ex post' sense. We have seen that the value of the total output in the economy is equal to the total income generated. In other words, the value of the net national product (NNP) is always equal to the net national income (NNI). Let us look into the contents of each of these

values. If output worth Rs. 100 has been produced, income generated in the process will also be Rs. 100. This income will partly be spent on consumption and the rest of it will be saved. Let the amount spent on consumption be Rs. 80 and the 'savings' be equal to Rs. 20. Naturally, therefore, out of a total output worth of Rs. 100, which was produced, Rs. 80 worth of consumption goods must have been sold because just as much was spent on consumption goods by the people. *The rest of Rs. 20 worth of output will either consist of goods not immediately meant for consumption (viz. investment goods) or such consumption goods which could not be sold of and have therefore, to be added to the stocks. This unintended addition to the stocks is called unintended investment. Thus the Rs. 20 worth of output (=NNP-consumption) consists of investment in the normal sense plus the unintended part of investment. In accounting practice, this whole (the planned as well as the unplanned components) will be called investment (i.e. the part of output which has not been consumed in the current period).* Hence we can write NNP = C (=80) + I (=20). Out of the total income of Rs. 100 (=NNI), Rs. 80 was spent on consumption i.e., C=80 and the rest was saved (=20). So what was not consumed out of the NNP was investment and what was not spent on consumption out of NNI was savings. Since NNP=NNI, investment must be equal to saving by definition.

$$NNP = NNI$$
$$\text{or } C+I = C+S$$
$$\therefore I = S$$

It needs to be stressed at this point that the present interpretation of savings and investment efers to merely a definitional or accounting identity and it does not help us in understanding the rocess of income determination as the 'planned' or 'ex-ante' concepts of savings and investment id. This, however, resolves the conflict between the two seemingly contradictory statements : Savings and investment are always equal' and 'savings and investment are equal only at the point f equilibrium'. According to the 'realised' 'accounting' or 'ex post' interpretation, the former atement is correct. According to the 'planned', 'intended' or 'ex-ante' interpretation of savings nd investment, the latter statement is correct. As we have seen above, the second interpretation : the relevant one from the point of view of income determination.

SELF-CHECK EXERCISES

Review your understanding of the following concepts :

a) "Realized" or "ex-post" savings and investment.

b) "Intended" or "planned" savings and investment.

c) Saving and investment are always equal in the realised sense.

d) Which of the two concepts is relevant for income determination ? Saving and investment are equal only in equilibrium in the planned sense.

VI

INCOME, CONSUMPTION AND SAVINGS

Our study of the circular flow of income generation showed that the crucial variable etermining the level of income is the aggregate expenditure (demand). If the level of expenditure

rises, so will the income level. When investment exceeds saving, it only means that withdrawal from the flow of expenditure (due to savings) is less than the injection (in the form of investment expenditure) and hence the aggregate expenditure and demand rise with a consequent rise in the income level.

The two main expenditure items which go to determine the level of aggregate demand in our example are consumption and investment *For the present, investment expenditure is assumed to be autonomous i.e. given from outside the system.* It is not dependent on the variables within the system. Hence we leave this variable at this stage and go over to a discussion of the other determinant of aggregate demand viz. consumption expenditure.

Corresponding to a certain level of output, an equal amount of income is created which is distributed among the factors of production as their remuneration in the form of wages, profits, interest and rent. But this fact does not guarantee an equal amount of spending. Expenditure may be greater or less than the amount of income generated in the system. The amount of spending on consumption will depend upon the relationship that might exist between income and consumption. *Such a relationship which indicates as to how consumption varies in response to changes in income is called the 'consumption function'.*

Normally, consumption expenditure increases with income. As the community grows richer, it tends to consume more. *The ratio between total consumption expenditure and the total income is called the average propensity to consume (APC).* For, example if out of a total income of 100, 80 is consumed, then the APC would be 80/100 = 0.8. Correspondingly, we can define the *average propensity to save,* (APS) as the ratio between the total savings and the total income (=20/100=0.2).

Another set of important concepts is given by the *marginal* propensity to consume (MPC) and the *marginal propensity to save* (MPS). While the APC and the APS relate the total consumption and saving with the total income, *the MPC and MPS relate the changes in consumption and saving with the changes in income.* If an increase in income from 100 to 200 induces an increase in consumption from 80 to 150 and an increase in saving from 20 to 50 then the MPC will equal 70/100 [=change in consumption (150-80) ÷ change in income (200–100] and the MPS will be equal to 30/100 [=change in saving (50-20) ÷ change in income (200-100]. *These two concepts tell us the proportion of any change in income which will be consumed or saved.* If we write Y for income, C for consumption and S for savings, then the APC and APS can be written as C/Y and S/Y. If for changes in income, consumption and saving, we write ΔY, ΔC and ΔS, then MPC and MPS can be written as $\Delta C/\Delta Y$ and $\Delta S/\Delta Y$ respectively. Consumption during any time-period depends not only on current income, but also on a host of other subjective and objective factors. We shall consider these factors in detail in a later section. *For the present, we start our analysis on the assumption that current income is the principal variable upon which aggregate consumption depends.* With a view to simplifying the exposition of the basic mechanics of income determination, we start with a simple consumption function based on Keynes' 'fundamental psychological rule' which incorporates the following elements :

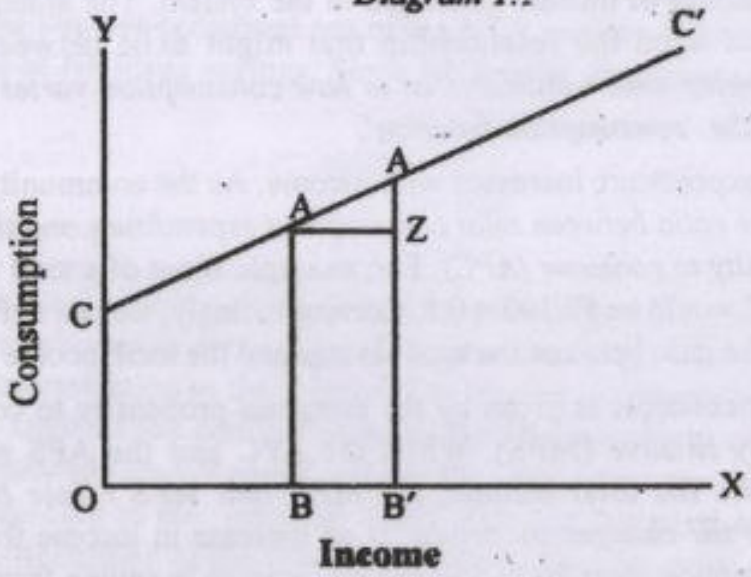
1. Real consumption varies directly with real income (if price-level is assumed to be constant, then real and monetary income are the same). In other words, consumption rises and falls with rise and fall in income.

2. As income increases, consumption also increases, but by less than the increase in income, part of the additional income being saved. This means that $\Delta Y = \Delta C + \Delta S$ (where Y denotes come, C consumption, S saving and Δ denotes change) and $\frac{\Delta C}{\Delta Y} + \frac{\Delta S}{\Delta Y} = 1$. It is clear that C ΔY (MPC) is positive, but less than 1.

3. Consumption cannot fall below a certain minimum level even if income falls to zero This : the bare subsistence level of consumption. This part of consumption is autonomous or ıdependent of the level of income. The equation C = Ca + c.Y summarises such a consumption ınction. In this equation, C stands for aggregate consumption, Ca stands for autonomous part of and c is the increase in income which is consumed or marginal propensity to consume ΔC/ΔY.

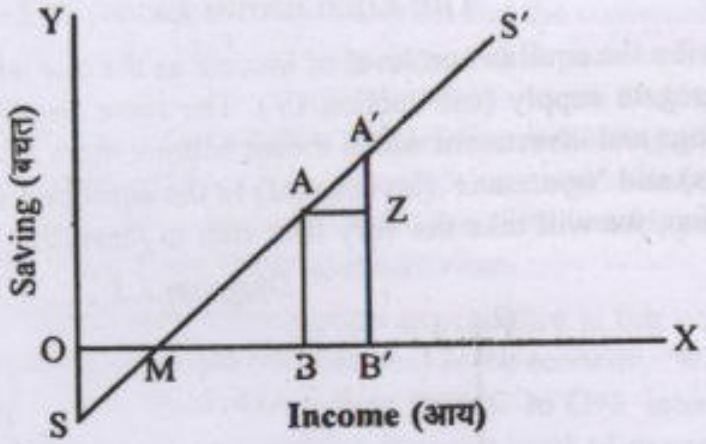
In the diagram below, curve CC depicts the consumption function stated in the above equation e. C = Ca +c.Y. The related concepts APC, APS, MPC and MPS are explained graphically below :

Diagram 1.1



In the above diagram, OC is the level of autonomous consumption (Ca in the above equation). Consumption does not fall below this level even if income falls to zero. When income is OB, the corresponding consumption level would be AB; when it rises to OB′, the consumption level rises to A′ B′. The line CC′ cuts the Y-axis at C, indicating that consumption is OC even when the ncome falls to zero. Once we define a relationship like CC′, it becomes easy for us to derive APC and MPC. APC in the above diagram would be AB/OB for income OB and A′B′/OB′ for he income level OB′. The MPC will be equal to A′ Z/AZ. The ratio A′Z/AZ indicates the slope of the consumption function. It shows as to how steep the consumption line is.

Diagram 1.2



An exactly similar analysis can be carried out with respect to the savings curve relating savings with income. In diagram 1.2 above, the curve SS′ cuts the Y axis at S below point O indicating that at zero income level the savings are negative and the amount of negative savings is OS. Upto point M, the SS′ curve remains below the X-axis indicating that upto the income level OM, the savings remain negative and they become zero only at point M. After the point M, however, the relationship between savings and income becomes positive and we can proceed to derive the average and marginal propensity to save in exactly the same way as we did in the case of the consumption curve. The values of the APS and the MPS according to the above diagram are : AB/OB or A′B′/OB′ (for APS) and A′Z/AZ (for MPS).

About the behaviour of the MPS and the MPC, it is said that their values are almost always less than one because not whole of a change in income is either consumed or saved. Usually it is only a portion of the total change in income which is consumed and the rest saved. Further, it is maintained that at high levels of income, the additional consumption out of the additional income tends to decline and the proportion of it that is saved tends to increase. In other words, the MPC tends to decline while the MPS tends to increase with a rise in incomes. This is reasonable to assume since at higher levels of income, most of the essential consumption needs are satisfied which reduce the urge for additional consumption out of an addition to income. When consumption out of additional income falls, savings will naturally increase, thus increasing the value of the MPS.

SELF–CHECK EXERCISE

Define the following concepts on the basis of our *discussion* of the preceding sub-section

(a) The consumption function.

(b) Average propensities to consume and save.

(c) Marginal propensities to consume and save.

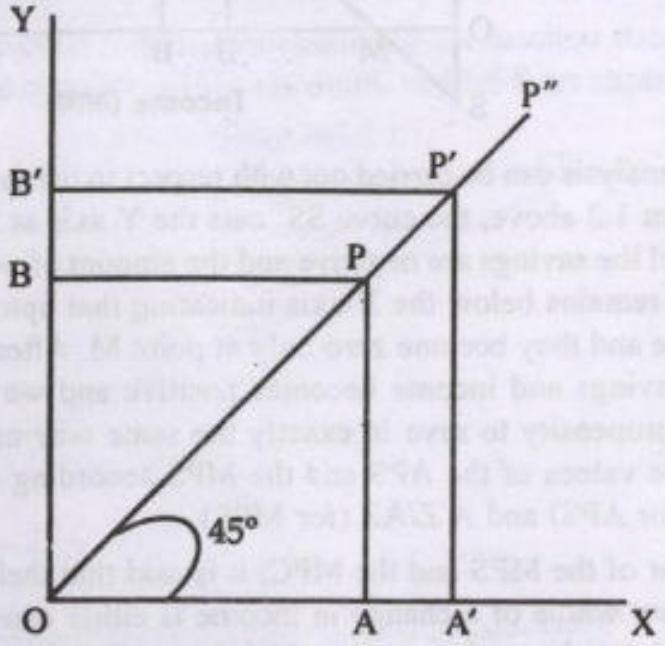
(d) Draw a diagram to identify the four concepts.

V.II

The Equilibrium Level of Income

We describe the equilibrium level of income as the one which equates the aggregate demand with the aggregate supply (sub-section IV). The same condition was expressed as an equality between savings and investment which meant nothing more than the equality of the *'withdrawals'* from (savings) and *'injections'* (investment) to the equilibrating values of aggregate demand. In this sub-section, we will take the very first step to *formalise this concept.*

Diagram 1.3



Let us start by understanding a very fundamental *tool* of analysis in this field viz the '45° line Y'. The diagram 1.3 shows a '45°' line starting from the *origin*. The property of this line is that the perpendiculars drawn from any point on it to the two axes must be equal. For instance, the perpendiculars drawn from the point P to the two axes, PA and PB must equal each other. Similarly, P' A' must equal P' B'. Thus we can take any number of such points P, P', P" ....., we will find that the perpendiculars to the two axes drawn from the same point will always be equal. The 45° line thus consists of points which are equi-distant from the two axes.

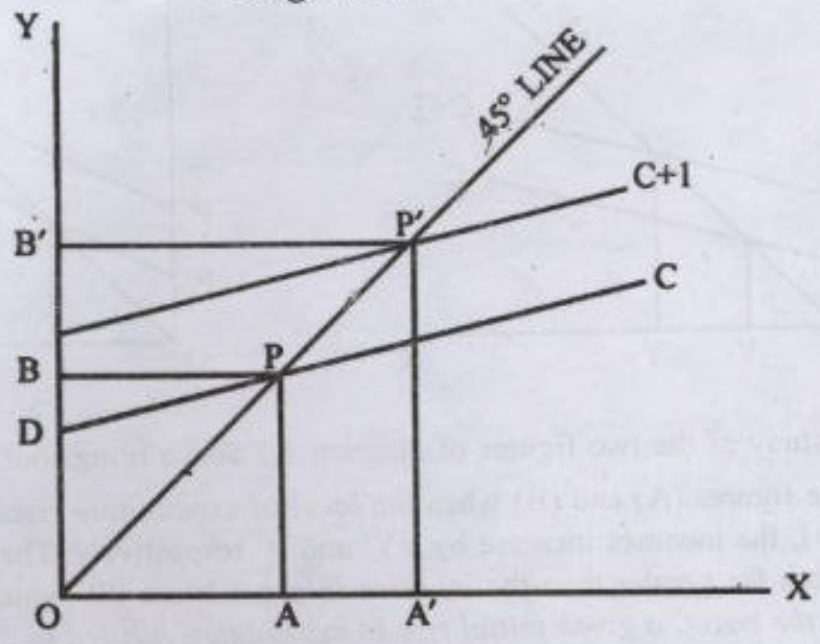
This property of the 45° line gives us a very important tool of analysis. If in the diagram above, we represent output on the X axis and expenditure on the Y axis, then what does a point like P indicate under such circumstances ? It indicates that PA (=OB representing expenditure and hence aggregate demand) is equal to PB (=OA which represents output/income). *In other words, P indicates a position of equilibrium where aggregate demand (expenditure) is just equal to supply (output).* We can argue the same way about P' which represents another equilibrium point. *Since every point on the 45° line is an equilibrium point, we can always determine the equilibrium level of income with reference to such a line.*

Let us assume that the only form of expenditure in our economy is consumption expenditure. Therefore, in diagram 1.4. below, on the Y axis we replace expenditure by consumption. Now

the consumption line C cuts the 45° line at point P. Therefore, at P, consumption expenditure is equal to output/income. Since along the 45° line consumption is all along equal to output, but whenever the consumption curve lies above the 45° line it implies that the community is consuming more than the total output either by borrowing or by drawing upon *its past accumulated stocks.* Such a situation holds good for the portion PD of the consumption curve. To the right of P, the portion of PC of the consumption curve is lying below the 45° line indicating that consumption is less than output. *It is only at the point P, where the consumption curve is intersecting the 45° line, that consumption expenditure is equal to output by definition. Since at this point expenditure (demand) is equal to output (supply), it is the point of equilibrium.*

Let us now assume that there is not only consumption expenditure in our economy but that there is also investment expenditure (autonomously undertaken) in the economy. With the inclusion of the investment expenditure, the expenditure curve rises from C to C+I, intersecting the 45° line at P′. Now P′ is the new equilibrium point equating the new level of expenditure with the new level of output, which in turn rises from OA to OA′.

Diagram 1.4



Thus as a general rule, we may note, the equilibrium is given by the point of intersection between the expenditure curve (C or C+I) and the 45° line, implying the equality of total expenditure (aggregate demand) and output (aggregate supply).

SELF CHECK EXERCISES

(1) Make sure that you understand the use of the 45° line.

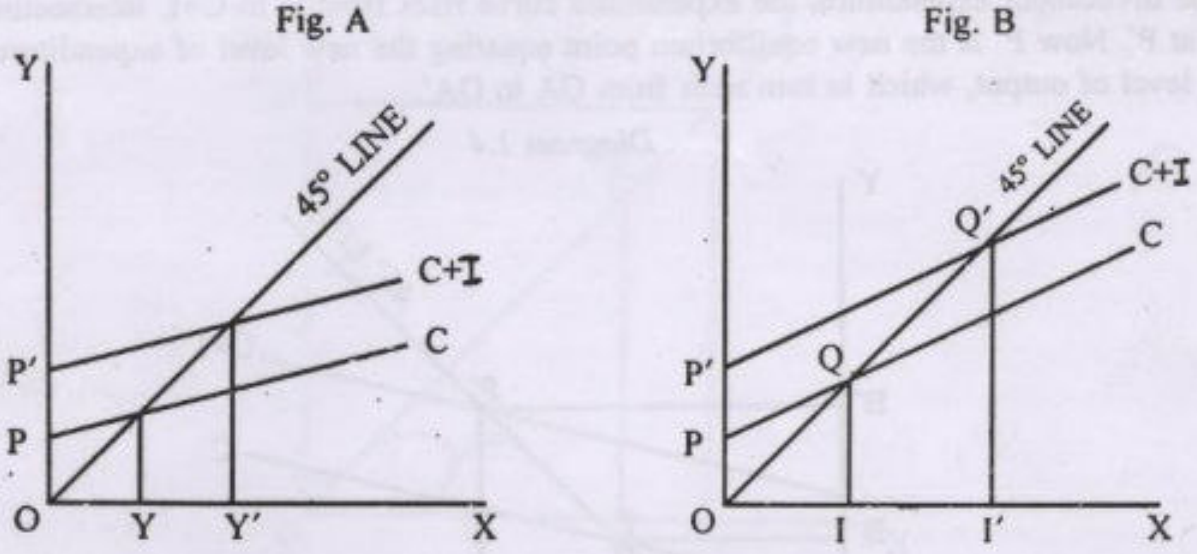
(2) Draw sketches to show that the level of income changes with the level of expenditure.

IX
THE MULTIPLIER

The level of income in an economy is determined by the level of expenditure. Therefore, if the former needs to be raised, the latter has to be manipulated accordingly. In the last sub-section we saw that when the level of expenditure was raised from C to C+I, in diagram 1.4 above, the equilibrium level of income rose form OA to OA'. When the expenditure level is raised, it induces higher output, income and employment in the economy.

Let us try to look into the process in slightly greater detail and try to note the main features of the movement of the economy from position P to P' in diagram 1.5.

Diagram 1.5



A close study of the two figures of diagram 1.5 above brings out the following points :

(i) In the figures (A) and (B) when the level of expenditure rises by the same amount PP' from C to C+I, the incomes increase by YY' and II' respectively. The increase in incomes YY' and II' are both far greater than the increase in expenditure PP' which has given rise to them. *Thus in both the cases, a given initial rise in expenditure has led to a more than proportionate eventual increase in incomes, or we can say that the eventual increase in income is a* 'multiple' of the initial increase in expenditure.

(ii) The amount by which the income level eventually increases (i.e. YY' and II') consequent to a certain increase in investment expenditure P'P is larger in Fig. B compared to A (II'>YY'). The slope of the consumption line C happens to be greater in (B) compared to (A). We have noted earlier, in our discussion of the consumption function that the slope of the consumption line is given by the MPC (marginal propensity to consume). Hence steeper the consumption line, higher is MPC.

The ratio between the total increase in income and the initial increase in expenditure is called 'Multiplier'. It shows the number of times by which income multiplies itself consequent to an itial increase in expenditure. For example, if due to an initial increase in expenditure of

Rs. 500, the eventual increase in income is Rs. 5000, the value of the multiplier will be 10 (5000/500=10). *The higher the value of the MPC, the higher will be the value of the multiplier.* In the diagrams above, the values of the multiplier in (A) and (B) are YY'/PP' and II'/PP' respectively. Since the distance II' is greater than YY', the multiplier has a higher value in (B) where the C line is steeper or the MPC is higher than in (A).

Let us try to find out now as to why an initial increase in expenditure results in an increase in income far bigger than itself. The *mechanism* can be explained with the help of a simple example. Suppose we start from an equilibrium position such as in diagram 1.5 above. Let us further suppose that at this stage an autonomous investment of Rs. 100 takes place and that this whole amount is spent in employing labour for an *investment project*. Now as the Rs. 100 are distributed among the labourers, their incomes increase by as much amount. These labourers will now spend their incomes in buying various goods and services according to their MPC. Let us further assume that their MPC is .9, i.e., they spend 9/10th of any increases in income accruing to them. Since their incomes increased by Rs. 100, they will be spending Rs. 90 (100×.9=90) to buy goods and services and save the rest. These Rs. 90 will now accrue as incomes to those whose produce has been bought by the labourers. This *second set of income earners* will again spend their new found incomes according to their MPC (=.9). Thus their expenditure will be 90×.9 = 81. This expenditure of Rs. 81 will again accrue as income to another set of people who again will spend it according to their MPC (.9) and so on. *Thus we get a chain of incomes leading to spending, leading to incomes and so on.* If we now add up the incomes generated at each stage, we will get a *series like*, 100 + (100×9/10) + (100×9/10×9/10) i.e., 100+90+81+72.9+65.61 ..... etc. or 100 [1+9/10+(9/10)^2+(9/10)^3+(9/10)^4 ..... etc.].

This shows that through the above process (which is the multiplier process), an initial increase in expenditure of Rs. 100 leads to the generation of a much higher level of income (i.e. 100+90+81+72.9). The series can be extended indefinitely till the final figure approaches zero. With the help of elementary algebra we can sum up the series as given above to yield the total increase in income equal to

$$100\left(\frac{1}{1-9/10}\right) = 100 \times 10 = 1000.$$ The fraction $\left(\frac{1}{1\text{-}9/10}\right)$

represents the value of the multiplier. Now we know that the *fraction* 9/10 in our example is the MPC. Hence we can write the value of the multiplier as $\left(\frac{1}{1-\text{MPC}}\right)$ and the total increase in income will be given by :

$$\left[\begin{matrix}\text{the increase in} \\ \text{investment expenditure}\end{matrix}\right] \times \left[\frac{1}{1-\text{MPC}}\right]$$

The fraction (1/1-MPC) which is the value of the multiplier, can also be written as (1/MPS) since 1-MPC = MPS, it is obvious from the above expression that *the higher the value of the*

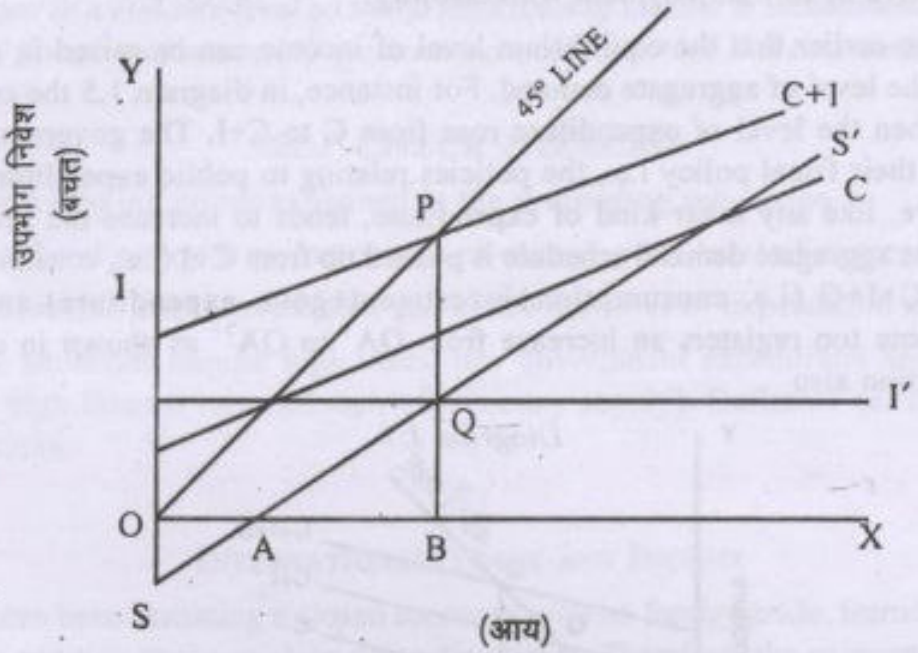
MPC (or lower the value of MPS), the higher will be the value of the multiplier. If the MPC tends to the value one (i.e. MPS = 0) the value of the multiplier tends to infinity.

If we look at the chain of income creation, we will find that the addition to income at each *subsequent* stage tends to decrease (e.g. 100, 90, 81, 72, 65.....). Thus the impact of the initial increase in expenditure tends to decrease over time and is bound to disappear if sufficient time is allowed to elapse. Hence if the income is to be maintained at a high level and not to be allowed to revert back to its original level, a once for-all increase in investment expenditure will not be enough. *Fresh doses of* additional expenditure (investment) would be needed after every period. Such a policy will ultimately stablise income at a high level.

If we start from a position such as Q in the above diagram (1.5 B) we will have aggregate demand equal to aggregate supply and also savings equal to investment (which are both zero at Q). It is an equilibrium situation. If under such circumstances, a *constant* dose of investment expenditure in *injected* into the system, period after period, it will immediately disturb the saving-investment equality by making investment greater than saving. We have seen earlier that when investment exceeds savings, incomes tend to expand. The expansion of income would take place through the multiplier process described above. As the income level rises, so does the savings level, because the capacity to save increases with income. Incomes and savings will keep on increasing till such time as the latter become equal to investment and equilibrium is re-established. *Thus an initial dose of investment leads to the multiplier process which results in an increase in the level of income. The income level is said to have reached its new equilibrium when the savings out of it (according to the normal propensity to save of the community) becomes equal to the increased investment.*

We can explain the above phenomenon with the help of diagram 1.6 below. The SS′ curve is the Saving Curve which shows that savings tend to increase with income. Upto OA, the income level is too low to permit any savings. Rather savings are negative to the left of point A. At point A savings are zero implying that the whole income is consumed. Beyond A, as the income increases to the right so do the savings and we get an upward sloping savings curve SS′. The II′ curve represents the constant level of investment which takes place in each period. As we keep on moving to the right from *the origin*, we are faced with a situation where investment is greater than savings. The investment curve II′ is above the saving line SS′. Naturally, therefore, the income level *tends* to rise and we proceed towards point B. As the income level rises, *the savings also increase as is shows* by the upward sloping curve SS′. The expansion of income ends when the saving curve intersects the investment curve at point Q and OB becomes the corresponding new equilibrium level of income. This is the point where the expansion of income will stop after the multiplier process has worked itself out completely.

Diagram 1.6



SELF-CHECK EXERCISES

Reflect over the following points made in the preceding sub-section :

(1) Multiplier is the ratio between the total change in income and the initial change in expenditure.

(2) Value of the multiplier depends on the MPC and is equal to $\frac{I}{I\text{-}MPC} = \frac{I}{MPS}$.

(3) Higher the value of MPC (or lower the value of MPS), the higher the value of the multiplier and vice versa.

(4) A constant flow of investment is needed to stabilize income at a high level. A once for all change in investment will not be able to sustain income at a higher level. The income will revert back to its original level after some time.

(5) Equilibrium is re-established after the multiplier has worked itself out and savings are again equated to the new level of investment.

X

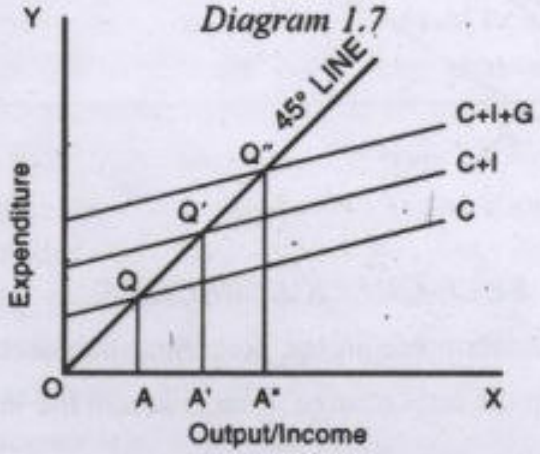
GOVERNMENT SPENDING AND TAXATION

Equilibrium, as defined in terms of equality between savings and investment or of aggregate demand and aggregate supply, is not something to be always *desirable* by itself. For, equilibrium can be attained at various levels of economic activity. It may, for instance, be attained in a situation where there is large scale unemployment and *excess capacity* existing in the economy. Naturally, such an equilibrium will only stagnate the economy at a very low level of economic activity. Thus it is not only desirable to attain equilibrium but also to have it at the appropriate level of economic activity. Modern governments throughout the world aim at attaining such an equilibrium

at the full employment level. In this section we will study the role of the government, in attaining this policy objective of full employment with stability.

We have seen earlier that the equilibrium level of income can be raised in an economy by suitably raising the level of aggregate demand. For instance, in diagram 1.5 the economy moved from Q to Q′ when the level of expenditure rose from C to C+I. The government can do this with the help of their fiscal policy i.e., the policies relating to public expenditure and taxation. Govt. expenditure, like any other kind of expenditure, tends to increase the level of effective demand level. The aggregate demand schedule is pushed up from C+I (i.e., consumption + private investment) to C+I+G (i.e. consumption+investment+govt. expenditure) and the level of equilibrium income too registers an increase from OA′ to OA″ as shown in diagram 1.7. A reduction in taxation also

Diagram 1.7



results in greater consumption and possibly greater investment which together tend to increase the level of aggregate demand. The net result would be a shift upward of the aggregate expenditure curve leading to a higher level of income. Reduction in govt. expenditure and increase in taxation have the opposite effect. They tend to reduce the level of aggregate demand. Needless to say, a lot depends not only on the amount of taxes collected but also the use they are put to. For the latter will have very significant bearing on the level of expenditure.

In view of the above implications, it is not difficult to see the appropriate policies that can be followed in times of inflation and *cyclical* depression. Inflation calls for reduction of aggregate demand by reducing public expenditure and increasing taxation while the latter needs higher levels of public expenditure and lower taxes. Policies of increasing aggregate demand, however, should not be pushed too far. For, once the economy reaches near full employment, increased demand may not result in additional output and may simply result in rising prices.

Besides affecting the level of expenditure directly through manipulation of public expenditure, the government also tries to affect the level of aggregate demand by influencing private investment. This can be done by suitable tax concessions on corporate profits etc. or *monetary measures* like reduction in the rate of interest, increasing credit supply etc. Such measures might help in increasing investment and thereby increasing the level of aggregate demand. In modern capitalist economies, the governments invariably play a crucial role in maintaining an appropriate level of

economic activity. *By a suitable choice of fiscal and monetary measures, they can keep the aggregate demand at a suitable level so that a high level of income is maintained. An appropriate combination of fiscal and monetary policies can also protect the economies from cyclical fluctuations.*

SELF-CHECK EXERCISE

Recapitulate the following points explained in the proceeding subsection.

(1) Government fiscal policy is an instrument of changing the level of aggregate demand.

(2) Monetary measures affect investment and hence the level of expenditure and demand.

(3) Inflationary situations require high taxes, low government expenditure and tight monetary policy (i.e. high interest rate and restricted money supply). Deflation calls for the opposite set of measures.

XI

International Trade and Income

So far we have been assuming a closed economy with no foreign trade. Introduction of foreign trade implies an addition to the existing domestic market. Therefore, the aggregate demand would consist of the demand generated in the home market plus the exports to foreigners. Just as the exports are an addition or 'injection' to the aggregate demand, the imports represent a 'leakage' or 'withdrawal' from it. Thus whenever there is an export surplus (i.e. excess of exports over imports), it has the effect of increasing the aggregate demand in the same way as investment, govt. expenditure or consumption expenditure. The aggregate demand curve will shift upward from C+I+G to C+I+G+X and the point of intersection with the 45° line will shift from Q″ to Q′″.

The introduction of foreign trade relations in *our model* does not change the conclusion at all. Its *impact* has to be measured through its effect on the total expenditure level in the economy. Whatever the source of the additional demand, (govt. expenditure, consumption, investment or exports) the end product *is* the same. Income will tend to increase through the multiplier effect which in turn might induce investment. *The system will ultimately come to an equilibrium when the saving out of the current level of income will equate itself with the new level of investment causing the change in income.*

SELF-CHECK EXERCISES

Draw a diagram to show that in case of an import surplus (i.e. when M>X or net X is negative), the aggregate demand curve and the income level will be reduced.

LESSON 2

DETERMINANT OF CONSUMPTION

As already stated, income creation at any stage is determined by the level of expenditure, and hence aggregate demand, in the earlier period. The two main expenditure items are consumption and investment. *For the time being, we take investment to be autonomous, meaning thereby that it is independent of all the factor within the economic system and is determined outside the system.* It is, so to say, a given quantity which does not change with change in income, consumption etc. With this, we leave investment here and proceed to discuss the other item of aggregate demand, namely, consumption.

The most important determinant of consumption is the level of income. This is as much true for an individual as it is for the society as a whole. However, there are different hypotheses regarding the ways in which income influences consumption. These are : Absolute income hypothesis, Relative income hypothesis, Permanent income hypothesis and the Life-cycle hypothesis. Each of these hypotheses assigns a different role to income in the determination of consumption.

The absolute Income Hypothesis

This hypothesis is associated with Keynes's theory of consumption and is based on his Fundamental Psychological law. According to this law :

(1) Level of consumption is determined by the absolute level of income. Higher the level of income, higher will tend to be the level of consumption.

(2) At very low levels of income, consumption exceeds income and saving is negative. Consumption is financed either by dissaving or borrowing.

(3) At a certain level of income, consumption equals income and saving becomes zero. This may be called the break even point.

(4) Beyond this point, as income rises, consumption also rises, but by less than the increase in income. This means that change in income ΔY is equal to $\Delta C+\Delta S$ (i.e., change in consumption and change in savings). Evidently $\Delta C/\Delta Y$ is less than 1, and $\Delta C/\Delta Y$ (i.e. MPC) + $\Delta S/\Delta Y$ (i.e. MPS)= 1

(5) Further $\Delta C/\Delta Y$ i.e., the marginal propensity to consume (MPC) declines with increasing levels of income.

The Relative Income Hypothesis

Duesenberry was the author of this hypothesis according to which a *family's consumption depends on the level of its income relative to the incomes of other families with which it identifies, rather than on the absolute level of its own income.* An example amply clarifies this hypothesis. Suppose your neighbours grow richer while your income remains unchanged. Your consumption will increase simply because your relative income position has deteriorated vis-a-vis your neighbours whom you tend to imitate. As you must have observed, low income people typically imitate the superior consumption patterns of the people in higher income groups. *Duesenberry*

has described this phenomenon as 'the demonstration effect'. According to this hypothesis, if incomes of all families in the society rise in the same proportion as the aggregate income (i.e., there is no change in the relative income position of different families), APC of each family will remain the same, as it was earlier before the change. In other words, changes in the level of aggregate income will not affect APC provided the distribution of income remains the same.

The Permanent Income Hypothesis

This hypothesis was presented by the famous economist Friedman. According to this hypothesis, *"permanent" consumption is proportional to "permanent" income. Actual income of any period consists of the sum of permanent and transitory components. Similarly, actual consumption during any period will consist of the basic permanent component and the random transitory component.* A family's actual yearly income may be greater than or less than its permanent income depending upon positive and negative transitory components such as sudden accrual of a bonus or sudden loss of wages due to breakdown of a plant. These unforeseen additions to or subtractions from a family's income cancel out over a long period but are present in the short period. Permanent income according to this hypothesis is the expected or anticipated average (or mean) income which a "family" expects to receive over a number of future years Permanent income of a family depends upon how much it has invested in human capital by way of education, training etc. of its members and how much non-human capital it has accumulated in the form of real estate, financial assets etc. On the basis of these two sources of earned and unearned income, each family tries to estimate its average flow of income over future years. *Permanent consumption is a constant proportion of permanent income according to this hypothesis. Consumers tend to adjust their consumption habits to their long-term or permanent income prospects and they usually do not change their consumption levels on account of temporary fluctuations in income.* A wage earner who suddenly becomes unemployed will normally not expect his income to remain at the same level and will, at least for a while, maintain consumption at its earlier level. In other words, APC of families at all levels of income is the same when expressed as a ratio of permanent consumption to permanent income. This also implies that the rich and the poor, both alike, save the same proportion of their respective permanent incomes. Some economists criticise this hypothesis on the grounds that even though all families may attempt to even out their consumption over time, how can the poorer families save the some proportion of income as the comparative richer families ?

The Life-cycle Hypothesis

This hypothesis is essentially similar to the permanent income hypothesis except for the fact that in the former, income relevant to consumption during any period is taken as the average of the income-flow over the whole life of the individual or family concerned.

Other Factors Affecting Consumption

Rate of Interest

According to the classical economists, higher the rate of interest, higher will be the rate of saving. This means a higher rate of interest will discourage consumption. However, this is not a balanced view. A rise in the rate of interest tends to produce a substitution effect towards more future and less present consumption (i.e., more saving). It also induces an income effect by increasing the individual's future income and thus reducing its marginal utility. *Therefore, the effect of a change in the rate of interest depends upon the relative strengths of the substitution effect (which encourages savings) and income-effect (which discourages savings).* In case of the richer sections of society who have already substantial amounts of assets, the income-effect will be more powerful than the substitution effect and a higher rate of interest may encourage them to consume more and save less. In case of lower-income groups, on the other hand, substitution effect may be stronger than the income effect and a higher of interest may encourage them to save more. Thus the net effect of changes in rate of interest on consumption may be negligible and empirical studies also support this.

Changes in The Price Level

A rise in the general price level causes a fall in real incomes while a fall in the price level causes a rise in real income. Thus, other things remaining constant, a fall in real income will lead to a fall in consumption and vice versa. *However, if people suffer from money illusion and do not recognise the effect of a change in the price-level on their real income, they may act differently and in that case, the net effect may be anything.*

Price Expectation

In a situation of continuing inflation which generates expectations of further rise in the price level, people are encouraged to purchase more at present with a view to avoiding purchases at higher prices in the future. Similarly a situation of falling prices may generate expectations of further fall in the price level and encourage people to postpone their purchases with a view to benefiting from the lower prices in the future. Thus expectations of a rise in the price level in future encourage present consumption and expectations of a fall in the price level discourage consumption at present.

Distribution of Income

It is a well known fact that MPC (Marginal Propensity to Consume) is high at lower levels of income and low at higher levels of income. This is because at lower levels of income, the pressure of immediate consumption needs is much more than at higher levels of income. From this, if follows that *a re-distribution of income from richer sections to the poorer ones will increase the level of aggregate consumption in the society, whereas an increase in the inequality of incomes will reduce aggregate consumption.*

Ownership of Financial Assets

Families with larger accumulation of financial assets feel richer and are inclined to spend more on consumption compared to the families who own less of financial assets. *This is true even when the disposable income in two cases is the same.* A similar kind of effect is produced by windfall gains and losses.

Consumer Credit

Availability and easier terms of consumer credit stimulate consumer expenditure on durable goods. You must be aware of the various hire purchase schemes available these days.

Besides the above factors, changes in the size and composition of population, pent up demand on account of ır etc. and institutional changes popularising long-term savings may also affect the level of c. umption and savings.

SELF–CHECK EXERCISES

(1) Identify the emphasis that each hypothesis lays on the influence of changes in income on consumption.

(2) Each of the influences–absolute income, relative income position, consideration for future income prospects–has a role in the determination of consumption.

LESSON 3

DETERMINANTS OF INVESTMENT

Introduction

As you already know, according to Keynes, the level of income in a capitalist economy depends upon the level of aggregate demand. Aggregate demand originates from private consumption expenditure, business investment expenditure, government expenditure and export demand. You have also seen that a change in any of the above items of expenditure results in a much larger change in income through the multiplier effect. Out of these items of expenditure, we have so far assumed investment as an autonomous quantity, determined independently and outside the system. *But now we relax that assumption and see how level of investment is determined in the economic system.* In this context, we discuss basically two theories of investment, the first being the Keynesian concept of the Marginal Efficiency of Capital (MEC) and the second is the Acceleration Principle.

Discounting Future Values

Before explaining the concept of MEC, we discuss first the principle of discounting in the context of capital goods. Capital goods are durable-use goods which aid production over a number of years. Returns from these capital goods are spread over the whole of their useful lives. Therefore, investment in capital goods necessitates estimation of their prospective yields. Prospective yield from a capital good is MPP × MR minus all variable costs (except interest and depreciation), where MPP is marginal physical product and MR is marginal revenue. *While yields obtainable from the use of a capital good are future quantities, the cost of a capital asset is payable at present. So long as we have a positive rate of interest, amounts available in future are worth less at present. Therefore, we cannot compare future quantities (prospective yields) with present cost.* We have to calculate the present value of the series of prospective yields to make them comparable with the cost of the capital good in question. For example, if the present market rate of interest is 10% p.a., Rs. 1000 lent out today would grow to Rs. 1210 in 2 years [$(1000\ (110/100)^2$] and to Rs. 1331 in 3 years [$1000\times(1.1)^3$]. Thus at the current market rate of interest of 10%, the present value of Rs. 1331 obtainable after 3 years is Rs. 1000 [That is $1331 \times (100/110)^3=1000$] and the present value of Rs. 1210 obtainable after 2 years is also Rs. 1000 [that is $1210\times(100/110)^2$]. *We call this "discounting" the future values, the process through which a future quantity shrinks when converted into present value. This discounting process is simply the reverse of the process through which any present quantity grows at a compound rate when carried into future.* We can similarly calculate the present value of a whole series of prospective yields available at different points of time in future.

The general formula for finding the present value of any future income-stream is :

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

In this equation, V is the present discounted value, R_1, R_2, ----R_n are prospective returns

expected to accrue in different years of the productive life of the capital good (say, a machine) and i is the rate of discount. Let us take a simple example to explain the process of finding the present value of the series of prospective yields of a machine expected to accrue during different time periods. Suppose that an enterpreneur expects that the use of a machine will generate Rs. 1000 per year for 5 years. The present values of the series of prospective yields (Rs. 1000 per year for 5 years) calculated at different rates of discount are presented in the table below :

TABLE

Discount Values of Rs. 1000 at Different Discount Rates and for Different Time Periods :

Rate of discount → Time Period ↓	3%	4%	5%	6%	7%	8%	9%	10%
1 Year	970.87	961.54	952.38	943.40	934.58	925.93	917.43	909.09
2 Years	942.60	924.56	907.03	890.00	873.44	857.34	841.68	826.45
3 Years	915.14	889.00	863.84	839.62	816.30	793.83	772.18	751.31
4 Years	888.49	854.80	822.70	792.09	762.90	735.03	708.43	683.01
5 Years	862.59	821.93	783.53	747.26	712.99	680.58	649.93	620.92
Total Present Value	4579.7	4451.8	4329.5	4212.4	4100.2	39992.2	3889.6	3790.8

Observation

1. *The present value of the series varies inversely with the rate of discount given the time-period. Smaller the rate of discount, higher the present value and vice versa.*
2. *With a given rate of discount, the present value also varies inversely with the time-period of discount. Longer the period, smaller is the present value and vice-versa.*

One method of estimating whether or not investment in a certain capital asset is a profitable proposition is simply to calculate the present value of the prospective yields by discounting them at the current market rate of interest and then to compare the present value so calculated with the current cost of the capital asset in question. If the current cost of the capital asset is less than the present value of the prospective yields (discounted at the market rate of interest), it is a profitable business proposition. In case, the current cost is greater than the present value thus calculated, it is not profitable to invest in the machine. If, however, the current cost and the present discounted value are just equal, it is a matter of indifference for the investor whether or not to invest. For example, in the table given above, when the series of prospective yields is discounted at the present market rate of interest of 5% p.a., the present value amounts to Rs. 4329.48. Evidently, if the current cost of the machine is less than this amount, it is a profitable proposition to invest in this machine and vice versa.

Marginal Efficiency of Capital

Keynes has approached this problem in a different manner. Instead of comparing the present

value of prospective yields (discounted at the market rate of interest) with the current cost of the capital asset in question, he requires us to find out *that rate of discount which makes the present value of the series equal to the current cost of the capital asset and then compare this rate of discount with the market rate of interest in order to judge whether investment in the machine is profitable or not. Keynes has defined 'marginal efficiency of capital' as that rate of discount which, when applied to the series of prospective yields obtainable from the use of a capital asset, will just reduce their sum to equal the cost of the asset under consideration.* MEC (Marginal efficiency of Capital) is thus determined only by the prospective yields and the current cost of the capital asset. *The rate of interest does not come into the picture in the determination of MEC.*

By substituting C for V and inserting the values of R_1, R_2, --------R_n in the discounting formula

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

we can find that rate of discount which equates the discounted value of the series to C (the current cost of the capital asset). Thus, if $C\,(=4100.2) = \frac{1000}{(1+i)^1} + \frac{1000}{(1+i)^2} + \frac{1000}{(1+i)^3} + \frac{1000}{(1+i)^4} + \frac{1000}{(1+i)^5}$, solving it for i gives us 0.07 or 7%. This is the value of MEC given the prospective yield of 1000 per year for 5 years and given the current cost of the machine at Rs. 4100.21. Similarly by taking different values of C, we can find the value of corresponding MEC's given the same prospective yields. For example, when C = 3790.8,

value of i in the equation $C = \frac{1000}{(1+i)^1} + \frac{1000}{(1+i)^2} + \frac{1000}{(1+i)^3} + \frac{1000}{(1+i)^4} + \frac{1000}{(1+i)^5}$ comes

out to be 0.10 i.e. 10% which is the MEC. Thus given any series of prospective yields and the current cost of the capital asset, we can solve the equation for i i.e. MEC.

Rate of interest enters the picture only when a firm considers the alternatives of investing a certain sum of money in the purchase of a capital asset promising a certain MEC or lending the sum at the current market rate of interest. It is evident that investing the sum in the purchase of the machine would be preferable to lending it only if MEC is greater than the market rat of interest. On the other hand, lending the sum rather then investing it in the capital asset would be a better proposition if the market rate of interest is greater than MEC. It would be a matter of indifference for the firm if MEC is equal to the current rate of interest.

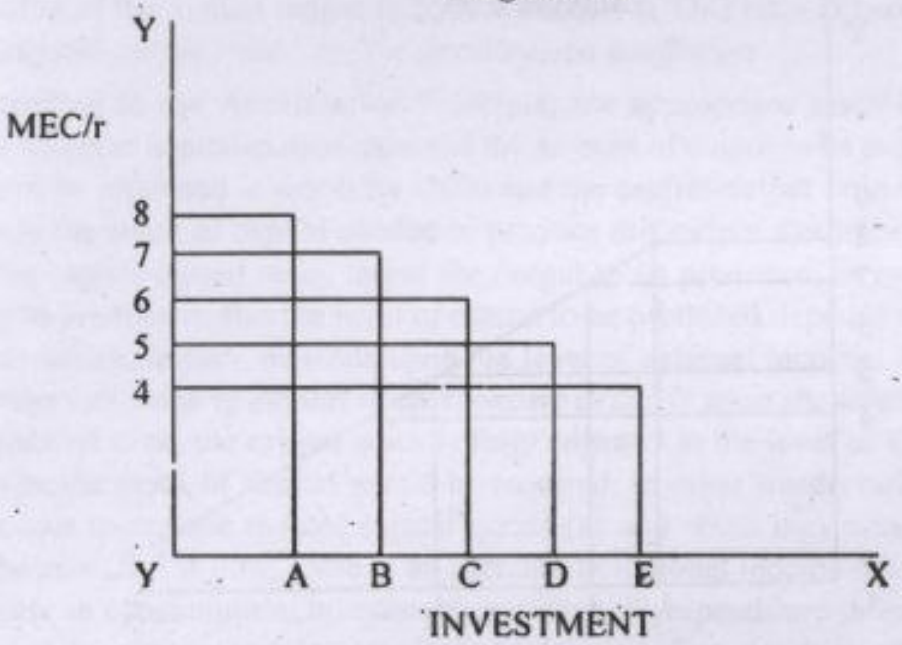
SELF–CHECK EXERCISES

1. *MEC* is determined by the series of prospective yields (R_1, R_2, ------- R_n) and the current cost of the capital good in question (C).
2. MEC is equal to that rate of discount (i) which equates the sum of the discounted values of the series with the current cost of the capital asset.
3. Given a series of prospective yields of capital asset, higher the current cost C, smaller is MEC and vice versa.
4. Rate of interest has no role in the determination of MEC.

MEC Schedule of a Firm

MEC of a capital asset depends upon its prospective yields (net of all costs except depreciation and interest) and current supply price of the asset. For a single firm, the current supply cost of the capital assets can be assumed as given since acquisition of more machines by a single firm is not likely to exert much pressure on the capital good industry. *Prospective yields depend upon costs of production associated with the output and market price of the product.* When the firm acquires and uses in production more units of the same capital asset, costs of production per unit of output are likely to increase because of the U-shape of the cost curve. Secondly, when the firm supplies a larger output, market price is likely to fall. *Therefore, prospective yields and hence MEC decline as more units of capital are used.* Because of the operation of these two factors, the MEC of additional capital assets, diminishes as the firm increases its investment in machines. Therefore, MEC schedule of the firm will slope downwards with increase in investment in machines as shown in the diagram below :

Diagram 3.1



OX measures investment and OY measures MEC and rate of interest r. OA corresponds to that level of investment (at 8% rate of interest) which is just for replacement so that net investment is zero. Net investment is undertaken only when there is need to add to the actual capital stock. This means that the actual stock at this point of time is equal to the desired stock and no net investment is required. If the market rate of interest falls to 7%, one more project requiring AB investment becomes profitable. If rate of interest falls to 6%, second project (with MEC=7%) and third project (with MEC=6%) also become profitable. If rate of interest falls further to 5%, the fourth project (with MEC=5%) also becomes profitable. *To sum up, net investment is zero when rate of interest is 8% and only replacement investment takes place. In other words, the actual capital stock is the optimum stock and no addition is required. But when rate of interest falls from 8% to 5%, size of the optimum stock becomes larger and the actual stock falls short of the optimum size which induces net investment in order to bring the actual stock to the optimum level.*

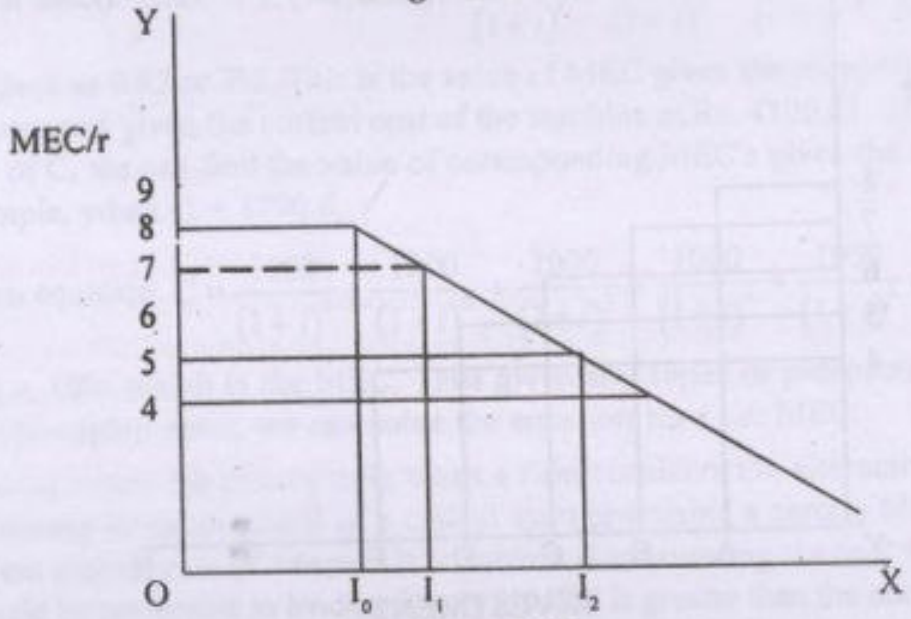
SELF–CHECK EXERCISES

1. Note that MEC and rate of interest are different things.
2. Disinvestment in case of high rate of interest cannot be more than replacement investment. Why ?
3. Draw a diagram to show that at rate of interest higher than 8%, replacement will be zero and net investment will be negative.

The Aggregate MEC Schedule

As usual, *we can sum up the MEC schedules of all the firms laterally to obtain MEC schedule for the economy as a whole.* In the process of summation, the kinks in the MEC schedules of individual firms (because of lumpiness of investment projects) even out and we get a smooth MEC curve sloping downward to the right with changes in the level of aggregate investment. The diagram below portrays an aggregate MEC curve for the economy as a whole.

Diagram 3.2



In the above diagram, investment is measured along the X-axis and MEC and rate of interest are measured along the Y-axis. It can be seen that when MEC and rate of interest are equal at 8%, actual capital stock is equal to the optimum stock and only replacement investment equal to OI_0 takes place. This is equilibrium position when there is no net investment in the economy. When the market rate of interest falls from 8% to 7%, the size of desired capital stock becomes larger than the actual stock and net investment equal to $I_0 I_1$, becomes necessary in order to bring the actual stock to the desired level. When the market rate of interest falls to 5%, level of net investment rises from I_0I_1 to I_0I_2 (i.e., by I_1I_2). *The important point to be noted here is whether this additional investment can be undertaken or not in a single year, depends upon the capacity of the capital goods industry.* This is so because while considering the case of a single firm, we could assume that an increase in investment by this firm would not cause the current supply price

of capital goods to rise. The same assumption cannot be made in the case of the economy as a whole.

The Acceleration Principle of Investment

In the context of the mechanics of income determination and the multiplier effect, we analysed how investment affects the level of income. But now we shall discuss how changes in the level of income affect investment. Whereas "autonomous investment" is a given quantity, determined independently of the economic system, investment that takes place in response to the changes in the level of income is known as "induced investment". *The theory which tells us how the level of investment is affected by changes in the level of income is known as the "acceleration principle". The basis of this principle is the notion that, given the state of technology and prices of the factors of production, there exists a certain normal ratio between the output to be produced and the stock of real capital needed to produce it. In other words, there is a technological relationship between output and the capital stock.* Suppose in an industry, plant and equipment worth Rs. 2000 are needed to produce an annual output worth Rs. 1000. In this case, the ratio of the value of capital to the value of the annual output is 2000 ÷ 1000 = 2. This ratio is known in economic literature as the *'capital-output ratio' or 'the acceleration coefficient'.*

According to the Acceleration Principle, the appropriate stock of capital in an economy depends upon the capital-output ratio and the amount of output to be produced. Suppose the output of cloth to be produced is worth Rs. 2000 and the capital-output ratio in the textile industry is 3. Obviously the stock of capital needed to produce this output would be Rs. 2000 × 3 = Rs. 6000. Given the capital-output ratio, larger the output to be produced, larger will be the capital stock required to produce it. But the level of output to be produced depends upon the expected demand (or sales) which, in turn, depends upon the level of national income. *Therefore, we can say that the appropriate stock of capital in an economy depends upon the level of national income.* Also, if at a point of time, the capital stock is fully adjusted to the level of national income, no further addition to the stock of capital would be required. In other words, only replacement investment would occur to replace the old capital goods (as and when they wear out) and net investment would be zero. But if now, there is an increase in national income due to any reason (say due to an increase in consumption, investment, government expenditure or exports), aggregate demand for output increases and the capital stock needed to produce this larger output is also proportionately larger. In order to bring the existing capital stock to the desired level, businessmen will undertake investment in addition to the normal replacement investment and thus net investment will be positive. The opposite will happen in the cases of a decline in the level of national income when aggregate demand for output will decrease and a smaller capital stock will be required to produce the smaller output. In this situation, a part of the existing capital stock will be rendered surplus and in order to bring it to the appropriate level, there will be disinvestment, meaning that businessmen will not replace the worn out capital goods.

As explained above, *the basic idea behind the acceleration principle is that the desired or optimum or appropriate stock of capital depends upon the level of final output to be produced i.e., the level of national income.* By the same logic, the change in the existing stock of capital (which is nothing but investment) depends on the change in the level of national income. If I

denotes investment, Y denotes income and V denotes the normal capital-output ratio, we can write the acaleration principle as :

$$I_t = V (Y_t - Y_{t-1})$$

This only means that the amount of net investment undertaken during a period (I_t) is equal to the change in income since the previous period ($Y_t - Y_{t-1}$) multiplied by the normal capital-output ratio V. The idea can be clarified with the help of a simple example.

Suppose that a machine costing Rs. 2000 produces annual output worth Rs. 1000 and lasts for 10 years. The capital output ratio is 2 (2000 ÷ 1000). Suppose further that the sales of the commodity produced has remained constant at Rs. 10,000 per year. This means that the economy must be using 10 machines (10,000 ÷ 1000). Also assume that every year one out of ten machines falls due for replacement. In such a situation investment will consist only of replacement purchases (i.e., one machine worth Rs. 2000 every year). In other words, as long as national income (which indicates aggregate demand and sales) remains constant, net investment would remain zero. If, however, in some particular year, national income rises to Rs. 12,000, the desired capital stock would rise to Rs.24,000 (current national income multiplied by the capital-output ratio, i.e., 12000×2). This means net investment worth Rs. 4000 will have to be undertaken or 2 new machines will have to be purchased in addition to the one machine that is to be replaced. You should note that with a 20% increase in national Income (from Rs. 1000 to Rs. 12000) there is 200% rise in gross investment (from Rs. 2000 to Rs. 6000). The economy will have capital stock worth Rs. 24000. Now if in the next year, national income falls to Rs. 11000, the desired capital stock will be 22000 and the businessmen will not even replace the machine that they used to replace, rather than buying more machines. The net investment in this situation will fall from Rs. 4000 to Rs. 2000. Thus a fall of approximately 8.5% in national income leads to a fall of 150% in net investment.

To sum up, we can say that :

1. *Net investment, It is a function of the change in the level of national income ($Y_t - Y_{t-1}$) and not of the level of national income as such (Y_t). This implies that net investment occurs only so long as national income grows, it falls to zero when national income is constant and becomes negative when national income falls.*
2. *The nature of investment is very volatile. A given change in national income induces a much larger change in the level of investment.*

If we critically examine the acceleration principle, we can say that *first, capital output ratio may not be fixed and there is generally some flexibility in the amount of capital that may be used to produce a given output. Secondly, the central consideration affecting the inducement to invest is profitability of investment and not the technological relation between output and capital. Thirdly, the acceleration principle is based on the assumption that the current level of demand will be maintained in future, which may not be correct.* The profitability of a capital asset depends upon vel of demand for its output during the whole of its economic life and not only on the current of demand. For example, if a rise in the level of demand is expected to be temporary, then ..ead of installing new plant and equipment, the increased demand may be met by working the ... equipment more intensively.

However, *the significance of the acceleration principle lies in the fact that it is not onl investment which affects the level of income, but it is also changes in the level of income whic affect investment, at least a part of investment called 'induced investment'.* If the multiplier tells us about the effect of changes in investment on the level of national income, the acceleration principle tells us about the effect of changes in the level of income on investment. In other words, the multiplier and the accelerator together show us the two-way relationship between income and investment. The change in investment leads to multiple changes in the level of income and these, in turn, would induce further changes in the rate of investment (through changes in the desired stock of capital). Changes in investment will again affect the level of income and thus induce further changes in the rate of investment and so on. The final path of income-generation will depend on the interaction between the multiplier effect and the acceleration effect.

SELF-CHECK EXERCISES

1. Can you go on increasing the level of output without increasing the capital stock ? If so, how long ?
2. Note that the need to undertake investment comes via changes in profitability.
3. Net investment is undertaken in the light of long-term prospects and not in response to short-run changes in demand.

LESSON 4

EMPLOYMENT AND UNEMPLOYMENT

I

Introduction

Cyclical fluctuations, when they occur, affect the output and employment levels alike. Our discussion of the mechanism of income determination indicated the possible policy measures to counter the cyclical fluctuations in output. Under given techniques of production, production of a certain amount of output implies the employment of a certain amount of labour force. Therefore, if the output varies, so does employment. Also, therefore, the policies devised to control output will, by implication be relevant for controlling the employment level. Nevertheless, the labour market has its own peculiarities which are reflected in the mechanism that comes into play for equating the demand and supply of labour in a particular situation. For this reason it deserves a separate study.

II

The Theories of Employment

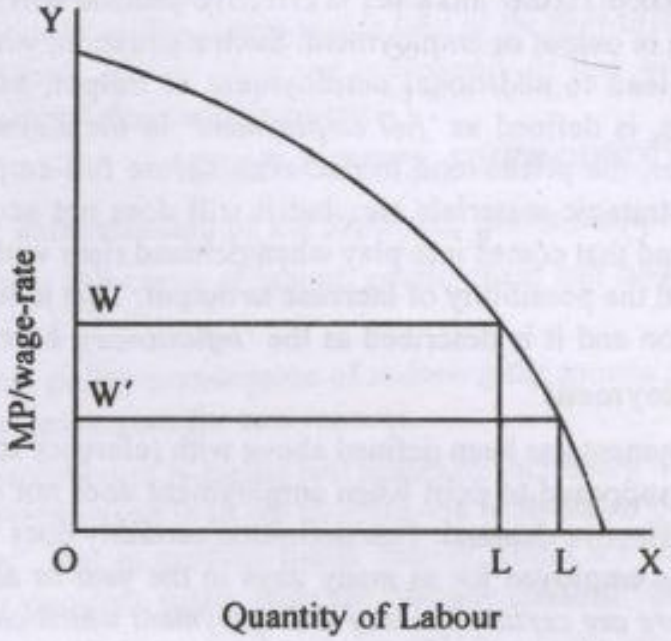
The problem of unemployment received great attention from the economists and the governments of the various countries after the Great Depression of the 1930's. This was the time when millions of workers were out of work and the overall level of economic activity sank to a very low level. Till that time the possibility of the occurrence of a chronic state of mass unemployment was not recognised. It was generally believed that the problem, at its worst, can only be a temporary one caused by *partial or sectional disequilibrium* between supply and demand for labour.

The classical economists argued that in the event of unemployment in the economy, the supply of labour will exceed the demand for it and the surplus labour will compete with the employed labour for the existing jobs, In the process, the price of labour or the wage rate will come down. At a lower wage rate, the employers will find it profitable to employ more labour and thus *absorb* additional labour into the productive system. So long as there is any amount of surplus labour, it will exert a downward pressure on wages till the wage rate becomes low enough to absorb all the surplus labour and ensure full employment. *The policy implication drawn from the above theory was that in the event of unemployment, the wage rate should be reduced so as to make it possible for the employers to offer more employment opportunities to labour.*

The classical view, as presented above, was contradicted by the Keynesian theory. According to the latter, the classical economists were correct in maintaining that the real wage rate must be reduced if employment has to be increased under a given marginal productivity curve of labour. Let us reproduce the marginal productivity diagram which we studied under the theory of distribution (see diagram 4.1 on the next page). It is obvious that if we want to increase the employment of labour from OL to O′L′, the real wage rate must fall from OW to OW′, assuming that the MP curve does not change. However, the difference of opinion between the classical and the Keynesian economists arose on how to reduce the real wage rate from W to W′. The classical

view that money wage rate should be reduced was opposed by the Keynesians for two reasons. First, *in the face of trade union pressure, it is not feasible to reduce the money wages. Secondly, wages are to be looked upon not only as a cost item but also as the most important source of demand for the products of any productive system. Hence if money wages are reduced, the demand for goods will go down leading to over-production and accumulation of unsold stocks.* This naturally will make the producers revise their production plans downwards which in turn will cause unemployment. Hence reduction of money wages can hardly solve the problem. It may only aggravate it.

Diagram 4.1



The solution suggested by Keynes, on the other hand, was *to raise the level of effective demand by increasing public expenditure etc.* When the demand level goes up. The output level will also go up, and when output grows it will lead to more employment. Further, the increase in effective demand will lead to increase in the price level mainly for two reasons. Firstly, output will take some time to increase in response to an increase in effective demand and in the meantime a situation will develop when demand will be greater than supply, leading to increase in prices. Secondly, as output tends to increase, certain *strategic* shortages like those of raw materials, power etc. may arise. This too will raise prices. *The net result will be that the general price level will be somewhat raised leading to a fall in the real wages. When the real wages fall, the employment level tends to increase (see fig. 4.1 above). The aggregate demand level is maintained because what is lost in the reduction of real wages is more than made up by the increase in employment.* This method of reducing the real wage rate is possible because, according to Keynes, the workers suffer from what he calls, *'money illusion'*. By this he means that the workers are more concerned about the money value of their wages rather than its real value. Therefore, so long as the money wage is kept constant, they may not mind very much the reduction in its real value due to price increases. This last assumption regarding 'money illusion' is not wholly justified in the modern

times because now the tendency is of tying the money wages to the price index of the consumer goods. Hence one wonders if this strategy can always succeed.

The main policy prescription that follows from the above is that in case of unemployment, attempts should be made to increase the level of effective demand by measures such as raising the level of public expenditure, deficit budgeting, reduction of the rate of interest etc., which will raise the output level in the economy, thereby absorbing more labour. Such policies are meant to use up the excess capacity which usually exists in the capitalist economies during cyclical depressions. So long as there is excess capacity and unemployment in the economy, a rise in the level of effective demand will lead to a rise in income and employment. Once, however, all available labour has been absorbed, further increases in effective demand will only lead to increase in prices without any increase in output or employment. Such a situation, when further increases in effective demand do not lead to additional employment or output, but result only in an inflationary increase in prices, is defined as *'full employment' in the Keynesian framework of analysis*. As mentioned earlier, the prices tend to rise even before full-employment is reached because of the shortages of strategic materials etc., but it still does not acquire the shape of a general rise in prices of the kind that comes into play when demand rises without there being any additional labour available and the possibility of increase in output. This latter kind of a situation is the starting point of inflation and it is described as the *'inflationary barrier'*.

The concept of 'Full-employment'

The concept of full employment has been defined above with reference to aggregate effective demand. Full employment is supposed to exist when employment does not increase in response to an increase in the level of effective demand. This definition certainly does not imply that under full-employment everybody is employed for as many days in the year or as many hours in the day as he is able to work. *There are certain kinds of unemployment which cannot be removed by increasing effective demand and hence, according to our definition above, these are consistent with full employment.*

The types of unemployment which are not related to effective demand, and are therefore, consistent with full employment can be listed as follows :

(a) Voluntary unemployment i.e., when people do not do any work of their own choice.

(b) Unemployment of the *unemployable* i.e., people who cannot be fitted into jobs because of say, certain physical or mental disabilities etc.

(c) Frictional unemployment caused by temporary maladjustment between the jobs available and those looking for the jobs.

(d) Seasonal unemployment caused by the seasonal nature of certain industries.

(e) Structural unemployment caused by the changes in the structure of the economy.

(f) Disguised unemployment or *underemployment*, which results mainly because of growth in population outsteping the growth of other complementary factors of production like capital etc.

These above mentioned sources of unemployment can add up to quite a significant quantity.

The solution in each of these cases has to be quite distinct and specific and the general measure of increasing effective demand will not do.

It appears that the concept of full employment as defined with reference to effective demand is rather too narrow and is more relevant for countries whose main worry arises from unemployment arising out of business cycles. For, in such cases an increase in effective demand solves the problem. But in the underdeveloped countries, the types (c), (d), (e) and (f) mentioned above tend to be quite important. A situation where huge masses of labour force are underemployed under the said categories cannot reasonably be described as one of full employment. Thus we may widen the definition a bit and say :

Full employment may be defined as a state in which every person who is able and willing to work can find employment within a reasonable time at the prevailing rate of wages, working hours and working conditions, and in positions reasonably in line with the aptitudes, abilities and occupational interests of those seeking work.

SELF-CHECK EXERCISES

Check up your understanding of the following points made in the preceding sub-section :

(1) Under a given MP curve of labour, employment can be increased only by reducing real wages.

(2) The classical policy prescription of reducing the money wage rate is not likely to solve the problem of unemployment for two reasons.

(3) Keynesian solution of reducing real wages by increasing the price level through increasing the level of effective demand is likely to solve the problem of cyclical unemployment, because of "money illusion". But in modern times, money wages are linked with the price level. This implies that labour does not suffer from the "money illusion" these days.

III

Specific Types of Unemployment

In the present sub-section we will discuss the specific types of unemployment mentioned above and possible measures which can be adopted to remove them.

Frictional Unemployment

This may be caused because of many reasons. Many people may be out of work because of insufficient demand for their own particular skills. There may be shortages of raw materials and other products which they use in their work. They may not be aware of opportunities for employment in other places where there is a scarcity of their particular skills. Sometimes they may know them but may not have the means of going there. In some cases a restriction imposed by trade unions may block their entry into fields somewhat different from their own. The state regulations may present a similar kind of obstacle to labour movement from one place to another.

In all such cases specific remedies are to be found in dealing with particular situations. Workers may be retrained when their own skills are no longer in demand. They may be provided information regarding employment opportunities in other trades and places. The financial and other assistance may be made available to enable them to move from one industry to another or from one region

to another. The discriminatory practices and restrictions may be removed to faciliate these workers to change occupations and locations. All such measures increase the mobility of labour and help in increasing volume of employment.

Reduction of frictional unemployment is often very necessary. There may be millions of people in the economy who are suffering from this type of unemployment. It is no consolation to an unemployed person to be told that his unemployment is only frictional and that otherwise the economy has full employment. The frustration and degradation caused due to unemployment is as great in this case as in the other types of unemployment. Therefore, along with the effort to increase the number of jobs, suitable measures should also be taken to fill the existing jobs with unemployed men who are retrained or encourage them to move to other places.

Seasonal unemployment

This type of unemployment prevails in some industries in which work is of a seasonal nature. The labour is employed for sometime and for the rest of the year they have to remain unemployed. In sugar industry, for example, the crushing season is only in the winter. For the rest of the period the workers in sugar industry are out of employment. It is quite possible that in the off-season some of the workers get work in other industries. But this may not be possible for the more specialised kinds of labour. Sometimes the problem of seasonal unemployment could be solved when two industries have different seasons in the year. In such cases workers get into the other industry when out of work in one industry. For example, the tailoring of summer and winter clothing is done in different seasons in the year. The same person can work for both and remain employed all the year round. But this kind of adjustment is not possible in the case of all seasonal industries. A certain amount of seasonal unemployment, therefore, is bound to exist in the seasonal industries. It should be noted that seasonal employment is found mainly in agriculture due to inelastic *time pattern of primary production.* Some agricultural operations can be performed only within certain approximate time span. Only at the time of sowing and harvesting much labour is needed and for the rest they have no or little work. Seasonal unemployment, like the frictional unemployment, is quite consistent with full employment. Even where there is full employment in an economy, some workers may be out of work in some parts of the year in some industries. The solution in this case is to find work for the unemployed in the slack season in some other industry.

Structural Unemployment

This type of unemployment is caused by *changes in the structure of industry and the economy.* Some industries decline as a result of a permanent fall in the demand for their products, while, others expand. The industries may decline due to changes in tastes, fashions and habits. For example, caps are no longer in fashion in India. Therefore, their production has fallen. Use of *substitutes* which are cheaper to produce or more attractive to consumers often cause an industry to decline. For example, rayon and nylon are gradually taking the place of silk for dresses. The demand for a country's exports may fall due to changes in people's tastes in other countries or availability of cheaper products from another country. The British cotton textiles have been gradually losing in the world markets because of the development of textile industries in other countries. Such a downward trend in the demand for the products of an industry leads to a fall in

the number of workers required. How far the unemployment in the economy increases, will also depend on the mobility of labour i.e., how rapidly the workers from the declining industries can find work in other industries which may be expanding.

The structural changes are also brought about by *technical progress.* In agriculture, high yielding varieties of crops may be planted. The introduction of labour-saving machinery in an industry may make a large number of workers superfluous. The mechanization is often a result of cost-reducing inventions or a fall in the price of capital goods. Price of the products are, therefore, likely to fall. If the demand for them is sufficiently elastic, as many workers as before may continue to be employed. But if the demand for a product increases less than in proportion to the fall in the number of workers required to produce the same output, there will be unemployment. For example if as a result of a certain innovation only half the number of workers are needed to produce the same quantity of the commodity, the sales must double to maintain the same volume of employment. In case sales do not double, the number of workers employed must decrease. In most cases employment will probably be reduced at least for some time. Then it will depend upon the rapidity with which these retrenched workers can find employment elsewhere. The sooner they can do so, the less unemployment will result form the change.

Structural unemployment is particularly important in the newly developing countries. The structure of industries changes rapidly in these countries. The mechanised production takes the place of handicraft production in a large number of industries. Since the demand for goods is not likely to keep pace with the rapid improvements in the technique of production, unemployment is bound to increase. The introduction of mechanisation in agriculture, which is often necessary to increase the production of food and raw materials, throws a large number of people out of employment. The industrial development in its early stages is often not rapid enough to enable them to be absorbed. The unemployment caused by the structural changes is, however, often transitory. The view that improvements in techniques must diminish the total employment is based on the belief that there is only a fixed amount of work to go round. It is argued that if machines do more work, less is left for human labour. This belief has been proved to be wrong. There are always many wants which are unsatisfied and there is considerable scope for raising the standards of living of people in a country. Thus there is plenty of work both for men and machines. Mechanization helps to produce more at lesser costs. It enables standards of living to rise so that the unemployment caused in the short run is likely to disappear in the long run due to increased demand for goods and services. The process of substituting machinery for labour has been going on in all the advanced countries of the world, yet it has been accompanied by a parallel growth in employment except for short periods. The industries in many countries are more fully mechanized today than they were ever before. Most of these countries are enjoying high levels of employment, much higher than before the machanization took place. A sudden and large structural change may cause some dislocation and unemployment for a while. But as the demand for goods increases due to cheaper production, many unemployed workers are employed again. Moreover, as mobility of labour increases, the disturbance caused by the change gradually disappears.

Disguised Unemployment

A type of unemployment peculiar to developing countries is what is termed as underemployment or *disguised unemployment.* In these countries, more workers are employed in certain industries, particularly in agriculture, than are necessary for a given amount of work. More workers work on a piece of land than can be economically engaged. The workers are, therefore, only partially employed. It means that they are working less hours per day or less days per year than is normal. Thus, unemployment in such circumstances is not apparent but disguised or concealed. *Taking the size of labour as given, disguised unemployment may be described as a situation in which the withdrawal of a certain quantity of labour to other uses, will not decrease the total output of the sector from which it is withdrawn. This is as much as to say that the marginal productivity of these units of labour in their original employment is zero or very close to zero.* The main cause of the emergence of disguised unemployment is the *secular* growth of the agricultural population and the failure of the non-agricultural sector to expand at the desired rate. Disguised unemployment is confined to those who are self employed.

SELF–CHECK EXERCISES

Note the following points.

(1) "Full employment" in the Keynesian framework of analysis is defined with reference to aggregate demand only.

(2) For this reason, it is consistant with types of unemployment listed in categories a, b, c, d, e and f.

(3) Each variety of unemployment has a separate solution.

IV

Evils of Unemployment

The existence of unemployment in an economy is obviously not desirable. It is dissatrous for the family whose bread winner is without a job. The family has to starve. Even when the unemployment relief is available, the standard of living has to be drastically curtailed. The food, clothing, and other things consumed have to be greatly reduced. The children may have to go without education and training, which will leave them without equipment for future life. But apart from the disadvantages to the individual, unemployed families and their dependents, the community as a whole suffers from it. Under full employment the economy works at peak level. When there is unemployment the output is less. The difference between this and the peak level of production is the loss to the community due to unemployment.

The loss in morale and psychological well-being caused by unemployment is no loss important. This loss cannot precisely be measured but it is there all the same. When people are hit by unemployment they lose their skill and capacity to work. The capacity of the economy to produce falls and it later takes time to restore it fully. The workers are demoralised and it takes them time to regain their morale. If coal is not dug out from the coal mines, it is not lost and can be taken out later. It is not so in respect of labour. Labour not used today cannot be utilised again. *Its quality* in fact deteriorates and it becomes less efficient tomorrow. Factories and equipment which

are unused today become less productive tomorrow. The losses due to unemployment are permanent losses.

Unemployment has social and political repercussions also. The discontentment caused by unemployment is harmful to social peace. When unemployment is widespread, there is often increase in crime and lawlessness. In countries where there is no system of unemployment benefits, the unemployed find it hard to maintain themselves and their families. Peace and security may be disturbed by industrial disputes. When labour is organised, trade unions may insist that their members out of work may be taken back into employment. And when employers find it unprofitable to do so, strikes and lockouts result.

The political effects of unemployment are equally disastrous. It was the great depression of 1929-31 which brought Hitler and Mussollini to power and created a threat to world peace. The economic policies by capitalist countries towards unemployment led to a disruption of international trade which in its turn, brought about political division between countries. The depression and unemployment created conditions which led to the Second World War.

LESSON 5

MONEY

Definition, Functions and Role of Money

Introduction

Life was very simple in the beginning of human existence. The basic human needs of food, clothing and shelter were fulfilled by man himself or the group in which he lived. Whatever simple production was there, was for self-consumption. There was no division of labour and no scope for exchange. But as time passed, human wants became varied and innumerable. It was simply not possible for any person to satisfy all his/her wants through own-production. Moreover, man realised the value of division of labour in enhancing production and making the process more efficient. This led to a complex division of labour and specialisation in production. Manufacturing of even a single commodity today is divided into many parts and production has become a joint venture in which large number of people participate. Every person gets his/her income through performing a very limited economic activity and spends this income on the commodities of his choice. Therefore, exchange has become a very important part of the economy. In the initial stages, the form of exchange was different and goods were exchanged for other goods. This was called barter. But this kind of exchange was possible in a small society where people had limited wants and knew of each other's wants. But barter was no longer practical in a big economy composed of innumerable people with innumerable wants. The necessary condition for barter to take place is double coincidence of wants, i.e., a person having a surplus of one commodity should be able to find another person who wants that very commodity and has something acceptable to offer in exchange at an agreed rate of exchange. But it is difficult to decide the terms of exchange as there is no common measure of value. Moreover, indivisibility of commodities and difficulty of storage make the barter system extremely difficult. In a complex economy, people invariably produce for others and cannot fulfil their wants except through a practical method of exchange, i.e. sale and purchase. This need resulted in the invention of money, something which is generally accepted in the process of exchange. Money may be any commodity chosen by common consent as a medium of exchange and all other commodities are expressed and valued in terms of this commodity.

It is not easy to go into the hoary origin of money and spell out precisely how and when it emerged in the pre-historic period. One theory is that the origin of money is not the result of man's conscious efforts, but it was discovered accidentally. According to Spalding, due to difficulties of the barter system (mentioned above), exchange must have become very difficult and some widely acceptable medium of exchange might have emerged e.g. articles of necessity or ornaments. The other theory contends that money was the result of man's rational efforts to find a common measure of value. According to G. Crowther, money "undoubtedly was an invention, it needed the conscious reasoning power of man to make the step from simple barter to money accounting." Adam Smith also believed that money resulted from the rational effort of man, but unlike Crowther, he thought that it was discovered as a medium of exchange and not as a unit of account. Whatever the origin of money, whether it emerged accidentally or was invented consciously, it is clear that it existed in societies which had no contact amongst themselves. Therefore, we can safely assume that it originated in different societies separately. Also, historically there is a set pattern of the evolution of money.

Self-Check Exercise

Carefully note that whether money was invented through conscious human effort or discovered accidently, what is important to know about money is that it removed the difficulties of barter and by lubricating the wheels of exchange, it facilitated division of labour and consequent increases in productivity.

Kinds of Money

It is agreed that the earliest form of money used in primitive societies was **commodity money**. Things which were commonly demanded (like salt, corn, utensils, furs, skins etc.) were used as money. In some regions, goats, cow or ox were chosen as medium of exchange. While elephant tusks, plumage of birds or tiger teeth served as money in tropical countries, it was shells in countries located on the sea-shore. Money took the form of tea in Tibet, rice in Japan and cattle in Vedic India. Even today, goats serve as money in some areas of Africa. Evidently, such commodities cannot perform efficiently as medium of exchange due to being indivisible, perishable and non-uniform.

With advancement of knowledge and civilisation, people started using **metals** as money. Metals had some merits and did not have the inadequacies of commodity money. To start with, pieces of brass, copper, iron, silver and gold were used as medium of exchange, but later on it was realised that iron, brass and copper were not good money materials as these were not scarce. Therefore, pieces of gold and silver and later on coins of gold and silver issued by rulers of various countries were used as money. Historical evidence shows that metal coins were circulating as money in our country around 400 B.C. Even today metal coins continue to be used as money though the techniques of coinage and quality of coins have improved tremendously.

Initially, the kings used to issue coins in their own image, certifying the weight and quality of the metal. Since intrinsic worth of these coins was no less than their face-value, these were called standard coins or **standard money**. Under gold standard, the banks and the government were supposed on demand to pay out gold in exchange for any form of money. **Token money**, on the other hand, is different from the full-bodied standard money as the face-value of the token coins is much higher than their metallic worth. It is not of any use to melt the token coins into metal. Today one, two and five rupee coins are an example of token money. Another important step in the development of money was the emergence of **paper money** which was slow and gradual. In the earlier times, goldsmiths used to issue receipts to people who deposited cash with them for safety reasons. In course of time, these paper receipts came to be accepted as money due to their credibility. Later on, paper money was issued by the state or by the central bank. It is believed that the Chinese were the first to use paper money which had the sanction of the state. Earlier, the currency notes issued were convertible into precious metals and in fact, represented gold reserves. But when paper money became widely acceptable, it became inconvertible. Today, the currency notes in circulation in different countries are not convertible, but they derive their acceptability from faith in the government.

The latest step in the development of money is **bank money** or **credit money**. This money came into being with the introduction and development of the banking system. Banks all over the world accept deposits which can be withdrawn or transferred through cheques. Banks promise to honour all the cheques issued by the depositors for amounts generally not exceeding the balance in their accounts. The cheque is an instrument through which the bank deposits become payable on

demand and can be transferred from one person or party to another. Though cheque in itself is not legal tender money (i.e. money which has the sanction of law), but it can be used to perform the same functions as money. One can pay for purchases through cheques and also receive the proceeds of sales through cheques. Bank money is generally more convenient than money, easier to carry and can be used to make or receive big payments. It is widely used in developed countries, but even in underdeveloped countries like India, it constitutes about 50 per cent of the money supply in the country. Bank money constitutes cheques, bank drafts and other credit instruments issued by the banks to transfer deposits.

Definition of Money

As far as the definition of money is concerned, some economists like Withers, Hicks and Bain define it with reference to its functions. According to these descriptive definitions, 'money is what money does' and what money does is described as working as a medium of exchange, measure of value, standard of deferred payments and store of value. Other economists like Hawtrey and Knapp adopt a legalistic view and argue that a commodity acquires the characteristic of general acceptability only when it is made legal tender by the state. According to this definition, a commodity cannot function as money unless it has the necessary backing of the state. This definition is allright in normal conditions, but in a situation of hyper-inflation (when the general price-level is rising very fast), even legal tender money loses the characteristic of general acceptability. Moreover, such money does not include demand deposits of banks. Most economists define money in terms of its general acceptability. Marshall, Cole and Keynes emphasize this aspect greatly in their writings. According to this definition, a commodity may or may not be legal tender, but it should possess general acceptability if it is to be used as money. Money may be classified on the basis of (1) legality and (2) liquidity. Legal tender money is backed by law and people are bound to accept it in exchange for goods and services or in discharge of debts. Non-legal tender money is generally accepted by people as a medium of exchange, but it is upto the person to accept it or not. Cheques, bank drafts, hundis, bills of exchange etc. are examples of non-legal tender or optional money. Money in the form of coins and currency notes is highly liquid and can be exchanged for any type of asset immediately. But there are other forms of money which are not as liquid as coins and notes, but can be converted into money involving some inconvenience, time and loss of value. Saving deposits with banks or post offices, time deposits, bills of exchange, debentures, bonds etc. fall in this category. These claims do not circulate as medium of exchange and are not actual money, but these can be called **quasi-money or near money**.

Self-Check Exercise

Note that the most important attribute of money is its general acceptability in exchange transactions and in settlement of debts. Money loses its utility the moment public loses confidence in its acceptability in transactions.

Functions of Money

Since the definition of money is also usually in terms of its functions, let us discuss the functions in some detail. The functions of money have been summed up in a couplet :

Money is a matter of functions four;

A medium, a measure, a standard, a store.

Medium of Exchange : The most important and primary function of money is that of acting

as a medium of exchange. This is, in fact, the most distinguishing characteristic of money which separates money from near-money and non-money assets. It also brings out the importance of the feature of general acceptability since no commodity can act as a medium of exchange unless it is acceptable to everyone. Money as a medium of exchange breaks up the act of exchange into two parts : sale and purchase. This removes the major difficulty of barter, i.e. double coincidence of wants. Hungry weavers who have surplus cloth do not have to search for naked farmers who have surplus food, but no cloth. This saves a lot of time, energy and resources. Thus money brings efficiency into exchange transactions. Moreover, it also promotes efficiency in allocation of resources by making it possible to exploit gains from specialisation in production and trade. People can engage in production, get income (in the form of money) from the proceeds of goods sold and spend that income or money on the goods and services they require. Thus money which is the general purchasing power, acts very efficiently as a medium of exchange.

Measure of Value : Money serves as a common unit of account or measure of value in terms of which the values of all goods and services are expressed. Thus money measures the value of economic goods and this value is expressed in terms of their money prices. In a money economy, it is possible to ascertain the relative exchange values of goods by comparing their market-prices. According to Crowther, "Money acts as a yardstick or standard measure of value to which all other things can be compared." There is a close relationship between the two primary functions of money. The commodity which is used as a medium of exchange in a society, is also used for measuring the values of various goods and services. In fact, the function of money as a unit of account is performed first, i.e. we first measure the value of goods and services to be exchanged and only then exchange various goods and services at pre-determined rates. Moreover, it is possible to measure the total value of different kinds of goods and services (measured in different units e.g. metres, kilograms, litres etc.) in terms of money. There is no other way to measure the national income of a country except in terms of money. Money as a measure of value is used for making all kinds of economic calculations. But sometimes there is a dichotomy and medium of exchange cannot be used as a unit of account. There is the famous case of German mark whose value declined so much due to hyper-inflation after the First World War that it was impossible to use it as a unit of account. Therefore American dollar or Swiss franc were used as a measure of value, but German mark remained in circulation as a medium of exchange. China faced a similar situation during the Second World War.

Standard of Deferred Payments : Credit plays a very important role in a modern capitalist economy. In most of the transactions, instant payments are not made. Debtors promise to pay on some future date and the debt as well as interest, if any, is settled in terms of money. This also applies to payments of rents, salaries, pensions, insurance premia etc. In an underdeveloped economy like India which is based on agriculture, there are instances of rent and wages being fixed and paid in kind. But in a money-using economy, most of the deferred payments and future obligations are stipulated in terms of money. This is for the simple reason that money can be expressed in definite and standardised units and its value (in terms of its purchasing power) remains generally stable over time. But in times of inflation or deflation, the value of money varies over time and money not only becomes a poor measure of value, but also a poor standard of deferred payments. All the same, in the absence of another universally acceptable standard, money continues to perform this function of settlement of debts. Therefore, just as money facilitates current transactions of goods and services through its function as a medium of exchange, it also facilitates credit transactions (i.e. exchange of present goods against future goods) through its function as a standard of deferred payments.

Store of Value : Another important function of money is serving as a store of value. People can hold their wealth in the form of money. This function is also derived from the use of money as a medium of exchange. As stated earlier, money breaks up the exchange transaction into two separate transactions of sale and purchase. Under barter, the two transactions are simultaneous, but the use of money separates them in time also. In a money-using economy, people get their incomes in the form of wages, salaries, rent, interest and profits at certain points of time. They may decide to spend the same immediately or at a later point of time. In the latter case, the full or at least a part of the income received is held in the form of money for varying periods. It is possible to do so because money has the unique feature of being a generalised purchasing power and is also the most liquid asset. This ensures that goods and services can be purchased by money at any time in future without delay or loss of value. Therefore money can be stored without loss in value (unless a situation of hyper-inflation prevails in the economy). Since man always felt the need of holding wealth, under the barter system he did so by storing commodities. But it involved substantial storage costs and loss in value of perishable commodities due to deterioration. Other assets can also serve as store of value, but money being the most liquid, is unique in this respect. According to Keynes, the role played by money as a store of value is no less important than its role as a medium of exchange. Money, in fact, acts as a bridge between present and future. But it is equally true that fluctuations in the value of money (due to inflation and deflation) affect its function as a store of value just as they affect its functions as a measure of value and a standard of deferred payments.

There are some other functions too that money performs. It helps us to transfer value from one person to another, from one place to another and over time due to its general acceptability. Many a time, such functions are performed by near-money such as cheques and bank drafts. Money also helps consumers in maximising their utility by equalising the ratio of marginal utilities to that of respective prices (expressed in terms of money). It also helps producers to maximise production by equalising the marginal productivities of various factors of production. Money also facilitates the distribution of national income among the various factors of production on the basis of their marginal productivities. Banks and firms keep sufficient money reserves for meeting their liabilities lest they become insolvent and lose their goodwill. Money, on account of its perfect liquidity, can be converted into any type of asset according to its profitability at a point of time. Money is also the basis of credit since circulation of credit instruments is not possible in the absence of sufficient case balances.

Self-Check Exercise

Note that people accept money in exchange and hold it for short or long duration (as a store of value) in the belief that other people will similarly accept it whenever the need arises.

Money is also used as a standard measure (a yardstick) of value; current and future (deferred payments).

Role of Money

The importance of money in an economy cannot be over-emphasized. Money may not produce anything, but not much can be produced without the help of money today. Money renders invaluable services in various economic processes going on in a modern capitalist economy. According to Dey, "Money is one of the most fundamental of all Man's inventions..... in the whole commercial side of Man's social existence, money is the essential invention on which all the rest is based." The important position of money is largely due to its two main characteristics. Money being a medium of exchange, is used for making all transactions and settling most of the debts. Purchases of consumer

goods and services, factors of production and claims such as bonds, bills, payment of taxes, are all made through money. As a result of this, money is used for distributing national income to workers, traders, government employees, shareholders and all others. Secondly, since money is general purchasing power and can be conveniently used to lay claims on goods and services, people generally prefer to hold their wealth in the form of money (which includes both currency and bank deposits).

In a capitalist economy, all the three central problems of what, how and for whom to produce, are solved through the price-mechanism which consists of prices of all goods and factors of production expressed in money. This economy is basically unplanned where a large number of consumers and producers take their decisions individually and it is only money prices of various goods and factors determined in more or less free markets, that bring order into the system. Since money splits exchange transaction into purchase and sale, two classes of buyers and sellers come into existence and their desires find their expression in the form of demand and supply respectively and influence various prices. Equilibrium between demand for and supply of a commodity/factor of production determines its price in the market. The set of goods prices helps consumers in choosing the basket of commodities according to their preferences and enables them to maximise their utility within the constraint of their income. The sets of goods and factor prices help the producer in choosing the most profitable line and technique of production. Profit is nothing but the difference between the price and cost of a commodity where the latter depends upon the prices and quantities of various factors of production used in the process of producing this commodity. The share of each person in the national income also depends upon the quantities of various factors of production supplied by him and their prices. To what extent that share in income (expressed in money) enables the person to lay claim on goods and services depends upon the prices of the latter. Thus, all the three problems of allocation of resources, choice of technique of production and distribution of income are solved in a capitalist economy through the price mechanism which is nothing but the value of various commodities and factors of production expressed in terms of money.

Money is essential for the development of an organised credit market. Such a credit market is not possible in a barter economy. Money also removes all trade barriers at national as well as international level by making specialisation and exchange of goods and services possible. Money is also important for the government in the sense that all taxes, fees, fines and other public revenues are realised in money only. The government also organises its public expenditure on activities that ensure maximum social advantage. Moreover, money is not only a technical device serving as a medium of exchange, measure of value, standard of deferred payments and store of value, but also influences the behaviour of such vital economic variables as level of output and employment in the economy. In a situation of unemployment in a modern capitalist economy, monetary adjustments are found useful to solve this problem. By increasing the supply of money (which we shall study shortly), rate of interest is sought to be reduced so that investment is encouraged, increasing output and employment. Also by increasing the monetary expenditure on consumption and investment through reduction in taxes and undertaking government projects, output and employment are sought to be increased. In a situation of inflation, the opposite kind of monetary policy (contractionary in nature) is adopted. Therefore, we can say that money is not wanted merely because it performs some useful functions, but it has become indispensable for the efficient management of a modern economy.

The role of money is not restricted to the capitalist economy. In a socialist economy also, where all the economic activities are coordinated by the central planning authority, money has to be used mainly as a medium of exchange and a unit of account. Resources are allocated on the basis of shadow prices which are also expressed in money. Wages and salaries are paid in terms of money.

People are free to organise their consumption on the basis of prevailing prices which may be partly or wholly controlled by the government. Therefore, even in a socialist society based essentially on economic planning, money and the price mechanism play a major role in the allocation of resources, distribution of income and expenditure on consumption. Lenin himself pointed out that a socialist economy could not be a moneyless economy.

Despite the crucial role that money plays in any modern economy, it cannot be considered as an unmixed blessing. It does promote employment, economic growth and welfare if it is properly managed. But if mismanaged, it can cause economic recession or inflation and result in untold miseries for the common people. As stated before, money acts as a measure of value, but its performance depends upon the extent of stability in its value in terms of goods and services or general purchasing power. We are able to measure wheat in quintals and cloth in metres simply because the weight of a quintal as well as the length of a metre is fixed. But if the yardstick itself is variable, all measurements lose their precision. Because of this, there emerges a difference between real values and monetary values of economic variables like national income, wages and other factor prices. Keynes talked of money illusion that workers suffer from because they cannot distinguish between money wages and real wages. But these days workers and their trade unions are aware of the effect of rising prices on their real wages and try to link their wages to the rate of inflation (through dearness allowance). But the problem of economic fluctuations caused by imperfections in various techniques of monetary control is quite real and causes hardships to the people.

To conclude, we can say that money is a tool and a very useful tool at that, but like all tools, it has to be used properly and efficiently so that it does not cause any harm to the user.

Self-Check Exercise

In a money economy money does many things. However, its most basic function is its use in exchange transactions and as a store of value. Imagine what will happen to productivity if money was not available.

LESSON 6

MEASURES OF MONEY SUPPLY

Having defined money, described its functions and importance in a modern economy, we now intend to discuss the supply of money and its various measures. But before we talk about the supply of money, let us say something briefly about the demand for money. It is obvious that unlike other consumer goods, money is not demanded for its own sake, nor does it possess any utility to satisfy human wants. It represents general purchasing power and is demanded because it helps people to gain command over goods and services which possess utility. It is also true that money is a barren and unproductive asset and does not yield anything. Other assets like stocks and shares, houses etc. yield returns in terms of dividends and rent. Money given on loan also yields interest. But even then people (households as well as firms) do hold their wealth in the form of money for three purposes.

According to classical economists, money is held by people for (1) transaction and (2) precautionary motives. Derived from the principal function of money as a medium of exchange is the **transaction demand** for money. Consumers require money to purchase goods and services while producers need money to obtain factors of production and intermediate goods which are required in the process of production. Therefore, the transaction demand for money depends upon the total volume of transactions in an economy. In addition to the money required for meeting certain and foreseen expenditures, people also keep money to cover unexpected expenditures resulting from uncertain and unforeseen circumstances e.g. accident, sudden illness, loss of job etc. Thus the motive to hold money to guard against future uncertainties is called **precautionary motive.** The demand for money on this account depends upon the level of income and also the access to credit market and the degree of liquidity of other assets. If there is a developed and organised money market, people can easily borrow or convert their assets into money to meet their unexpected needs. Precautionary motive is also a kind of transaction motive where the transactions are unforeseen and uncertain.

Keynes' innovation is the **speculative motive** for holding money. Both transaction and precautionary demand for money are derived from its function as a medium of exchange. But speculative demand for money is totally alien to the classical economics. In Keynesian theory, however, this demand for money occupies a strategic position. According to Keynes, speculative demand for money results from people's desire to make capital gains by buying bonds and other financial assets when their prices are low and selling them when their prices rise. In other words, people speculate about the future level of prices of various securities. As rational individuals who try to maximise their gains, they would hold those securities whose prices they expect to rise and try to dispose off those securities whose prices they anticipate to fall. Keynes defined the speculative motive as **"the desire of earning profit by knowing better than the market what the future will bring forth."** Obviously, speculative demand for money makes use of the function of money as a store of value. People tend to hold money (which is the most liquid asset) so that they can convert it into securities the moment it becomes profitable. Keynes related the speculative demand for money to the rate of interest. Since the total monetary return on bonds is fixed, their prices are inversely related to the rate of interest. When the bond prices rise, the rate of interest falls and vice-versa. People buy bonds only when their prices are low and the rate of interest is high. Otherwise, if the bond prices are high and the rate of interest is low, they prefer to hold money so that they can buy bonds as soon as their prices fall. Also, if they expect the interest rate to rise, they will convert their bonds into money and if they expect the rate of interest to fall, they will buy bonds with the stock of money they have. Thus, the speculative demand for money varies inversely with the rate of interest

and expectations about the rate of interest and bond prices also play a role.

Let us now discuss the supply of money and its various measures. Supply of money is the total volume of money held by the public where public includes the private individuals and business firms operating in the economy and **excludes the producers of money which are government, central bank and commercial banks.** Thus the money held by the government and the currency lying with the central bank and commercial banks is not included in the money supply. Therefore, the money supply of a country at any point of time (**this means it is a stock**) is the total amount of money in circulation. This may be held by individuals, households, business firms, institutions, local authorities, non-bank financial institutions and non-departmental public sector undertakings (like Indian Airlines, Hindustan Steel, etc.) and even foreign banks, governments and International Monetary Fund. The reason for measuring the stock of money in this way is to separate the producers or suppliers of money from the holders or demanders of money.

Since money is measurable, we can calculate the total stock of money at a particular point of time. Measuring money at different points of time, we can construct a whole time series of money supply which will show the behaviour of money supply over time. This information can be used to analyse the effects of changes in the money-supply on several important economic variables like level of income, prices, employment, rate of interest, investment, balance of payments etc., and to control the supply of money to attain certain policy goals. We shall discuss this aspect later, but let us now concentrate on various components of the money-supply.

The simplest measure of money-supply (denoted by M or M_1) consists of currency with the public (notes and coins), demand deposits (DD) at commercial banks and other deposits of the Reserve Bank of India (RBI). Currency includes coins and notes out of which coins and one rupee notes are issued by the government of India while notes of denomination of rupees two and above are issued by the RBI. All this is legal tender money. Demand deposits are defined as bank deposits payable on demand through cheques or otherwise. These deposits can serve as a medium of exchange if these are acceptable to the other party. If not acceptable, these can be immediately converted into cash. Thus, demand deposits are as liquid as currency. Other deposits of the RBI are its deposits other than those held by the government and banks. They include demand deposits of quasi-govt. institutions (like IDBI), foreign central banks and governments, IMF and the World Bank, etc. However, these other deposits (OD) of the RBI constitute a very small proportion (say less than one per cent) of the total money supply and hence can be ignored. Till 1967-68 in our country, the RBI used to publish only a single measure of money supply (M) defined as the sum of currency and demand deposits, both held by the public. From 1967-68, the RBI started publishing additionally a broader measure of money supply called 'aggregate monetary resources' (AMR). It was defined as M or M_1 plus the time-deposits of banks held by the public. From April 1977, another change was introduced and since then the RBI has been publishing data on four alternative measurers of money-supply, M_1, M_2, M_3 and M_4.

$M_1 = C + DD + OD$ (where C denotes currency, DD denotes demand deposits and OD denotes Other deposits of the RBI).

$M_2 = M_1$ + Savings deposits with post office savings banks.

$M_3 = M_1$ + net time deposits of banks.

$M_4 = M_3$ + total deposits with the Post Office savings organisations (excluding National Savings Certificates).

We have already explained M_1. Currency consists of paper currency as well as coins. Demand

deposits are the **net** demand deposits of banks and **not** their total deposits. Total deposits include both deposits from the public and inter-bank deposits while the latter are excluded from the definition of money. We have already discussed what other deposits of the RBI include and also pointed out their quantitative insignificance. M_3 is the same as AMR which, apart from M_1, includes time deposits of all banks (net of inter-bank deposits). M_2 and M_4 include Post Office deposits in addition to M_1 and M_3 respectively. It should be remembered that these deposits are not withdrawable by cheque as are demand deposits of banks. While M_2 includes only savings deposits of post offices, M_4 includes all post office deposits, whether savings or time deposits.

In all the different concepts of money supply described above, currency is the most liquid asset, followed by demand deposits of banks which can be easily converted into cash if the need arises. Saving deposits with post offices fall next in terms of liquidity and can be converted into money at a short notice. Time-deposits, whether of banks or post offices, come last in terms of liquidity and cannot be redeemed into money before the stipulated maturity period without loss of time and money. The RBI also views the four measures of money-supply to represent different degrees of liquidity, M_1 being the most liquid and M_4 being the least liquid. When it comes to the choice of the measure of money supply to be used, it all depends upon the context. It is necessary to know the reasons for which money is demanded and the sources from which this demand can be met. The most common measure of money supply is that provided by M_1 which is considered appropriate by most of the economists. M_3 is another important and broader measure of money supply which encompasses time-deposits of banks also.

But whatever the measure of money supply used, one thing that stands out clearly is that the quantity of money in circulation has increased over time and even its rate of growth has accelerated over time. For example, the rate of growth of M_1 increased from 3.6% during the fifties to more than 13% during the eighties. You may ask who controls the supply of money ? Basically it is the central bank, commercial banks and government who can influence or control the supply of money in the economy. The central bank not only issues currency, but also influences deposit money through its monetary policy. It can increase the supply of money by following a cheap money policy and decrease it through a tight money policy. Commercial banks can create credit in terms of demand deposits on the basis of money deposited with them by the people. The government can influence the supply of money through its fiscal policy (relating to revenue and expenditure) and public borrowing. An expansionary fiscal policy increases the supply of money by reducing taxes and increasing government expenditure (which may be partly financed by deficit financing). The opposite happens in case of a contractionary fiscal policy.

Self-Check Exercise

Carefully note that :

1. Supply of Money in an economy means the stock of money in the hands of the users of money (i.e. individuals, households, business firms, institutions, local authorities, non-bank financial institutions etc.) and not the amounts lying in the vaults of producers of money (i.e. The RBI, Commercial Banks and government)
2. Various types of money are distinguished on the basis of their liquidity i.e., the ease with which these can be used in exchange transactions. Currency is the most liquid form of money; it can be used in exchange, as and when needed without loss of time and value. On the other hand, Savings Bank Deposits are less liquid form of money since their use involves a cost (loss of interest) and loss of time.

LESSON 7

MONEY AND PRICES

As you know, money does not have any utility of its own and does not satisfy human wants directly. However, people exchange goods and services for money and it functions as a measure of value. As mentioned earlier, this measure of value is not constant itself and its own value keeps on changing. What is the value of money ? Since money helps us to gain command over goods and services which satisfy our wants, its value is determined by what a unit of money will buy in terms of a representative assortment of goods and services. In other words, the value of money is nothing, but its purchasing power which varies inversely with the general price-level. By general price-level, we mean prices of all the goods and services as distinct from prices of individual goods relative to those of other goods (which are called relative prices). Change in relative prices performs the function of allocation of resources in an economy. For example, a rise in the price of X-good relative to the price of Y-good, raises profits in the production of X and induces producers to shift resources from the production of Y to that of X. But when all prices in the economy rise or fall together, relative prices remain unchanged so that no transfer or reallocation of resources takes place. What happens when the general price level rises ? When that happens, the value of money declines, as a unit of money now commands a smaller amount of goods and services. On the contrary, a fall in general price-level raises the value of money since a unit of money can now buy more of goods and services.

The Quantity Theory of Money

We have related the value of money to the general price-level. It will be interesting to go into the reasons for changes in the general price level/value of money. Why do the variations in general price level take place ? The classical theory in this regard is known as the 'Quantity Theory of Money' or 'Fisher's Equation' (since it was formulated by Irving Fisher). According to this theory, changes in the general price-level are direct result of changes in the quantity of money in circulation. The equation formulated by Fisher is written as :

$$MV = PT$$

where M stands for the quantity of money in circulation in the economy and V stands for the velocity of circulation i.e. the number of times a unit of money changes hands on the average during a given period of time. (If a 100 rupees note changes hands 10 times during a month, it performs the function of 1000 rupees, not 100). Thus MV stands for the effective supply of money over a given period of time. On the right hand side of the equation, P stands for the average price-level and T for the volume of real transactions. Thus PT represents the money value of all transactions in the economy. What does the equation MV ≡ PT really signify ? It refers to the simple fact, which has to be true under all circumstances, that the stock of money multiplied by its velocity (i.e. the total supply of money) is always equal to the total value of all the transactions (i.e. the total transaction demand for money). In other words, this equation is an identity and conveys only this that all transactions have to be carried out through money. A change in any of the four variables (M,V, P and T) has to be compensated by equal change in one or more remaining variables. For example, if the amount of real transactions (T) increases, but the money supply (M) is fixed, then either each unit of money will be used a greater number of times to carry out the larger volume of transactions (i.e. V will increase) or the average price-level P must fall. Suppose T increases from 500 to 1000 and M remains constant at 500, then either V must double or P must fall to one-half of its previou value. On the other hand, if the product MV on the left side of the equation remains constant (either

because of constant M and V or because of compensating opposite changes in M and V) and T increases, then P will have to fall proportionately to make the product PT equal to the constant MV. As an identity, the equation MV = PT conveys nothing more than the simple fact that the total value of all transactions in the economy (PT) must be executed through the effective money-supply in the system, i.e., MV.

But according to the classical economists, the equation MV = PT was not merely a definitional identity, it was a theory which relates changes in the general price level (P) directly to the changes in the quantity of money (M). Their main hypothesis was that changes in the general price level are directly proportional to changes in the quantity of money in circulation *because* volume of real transactions (T) and velocity of circulation of money (V) are assumed constant. If V and T are assumed constant, it is quite obvious that changes in P will naturally be proportional to the changes in M. If M doubles, P will also double and if M decreases, P will also be pulled down proportionately. Thus so long as we accept the assumption of constant T and V, the conclusion of the quantity theory of money that changes in the quantity of money cause proportionate changes in the general price-level, holds true. But if a rise in the quantity of money is offset either by a decline in V or an increase in T, it will not lead to a proportional rise in the general price level.

Self-Check Exercises

1. Construct examples to show that if V and T are held constant, P will rise and fall proportionately to rise and fall in the quantity of M.
2. Construct another example to show that P may change in the opposite direction to changes in the quantity of M if V and T are allowed to vary.

Evaluation of the Quantity Theory

This equation was criticised by some economists for ignoring credit money which is a very important component of money supply in a modern economy. Therefore, Fisher extended this original equation by incorporating the volume of bank deposits (M') and its velocity of circulation (V'). The extended version stands as follows :

$MV + M'V' = PT$

If $M = 200$, $V = 6$, $M' = 500$, $V' = 4$ and $T = 1600$

then $P = \frac{MV + M'V'}{T} = \frac{200 \times 6 + 500 \times 4}{1600} = \frac{3200}{1600} = 2$. The value of money can be determined by $\frac{1}{P}$ or $\frac{T}{MV+M'V'}$. In the above case, value of money is $\frac{1}{2}$ or 0.5. Now suppose V, V' and T remain constant, but M rises from 200 to 400 and M' rises from 500 to 1000, then P will rise to $\frac{MV + M'V'}{T} = \frac{400 \times 6 + 1000 \times 4}{1600} = \frac{6400}{1600} = 4$. The value of money will fall to $\frac{1}{4} = 0.25$.

Let us examine this theory critically. The net effect of a change in the quantity of money on the general price level will depend upon the following factors :

(a) how the change in the quantity of money affects aggregate demand ?

(b) how the change in aggregate demand affects the level of output ?

(c) does velocity of circulation of money remain constant or varies ?

Let us examine these questions in some detail. As far as the first question is concerned, the assumption of the classical economists that an increase in the quantity of money will result in a proportional increase in aggregate demand, is based on the notion that rational individuals have no use for idle cash balances or in other words, there is no speculative demand for money. Their argument was that if people have more money than they need for their day-to-day transactions (i.e. if they are able to save), they will lend out the surplus money to the enterpreneurs at some interest rather than keeping it idle with them. The enterpreneurs, in turn, will use the borrowed funds by investing them in capital goods because the funds have a cost in terms of the interest to be paid. Thus the savings of the people will automatically generate an equal amount of investment demand in the economy and aggregate demand will increase exactly in proportion to the increase in the quantity of money. But in our discussion of the Keynesian theory of the rate of interest, we stated that rational individuals do hold some idle cash balances for speculative purpose. Therefore, it is not necessary that an increase in the quantity of money will always be lent out to enterpreneurs for investment, thus resulting in a proportional increase in aggregate demand. It is quite possible that it may wholly or mainly be held as idle cash balances, thus not resulting in any increase in aggregate demand.

The second question whether a change in the level of aggregate demand will or will not affect the level of output in the economy, will depend on whether the economy is working at the full employment level or whether there are unemployed resources in the economy. If there is already full employment of resources in the economy, then an increase in aggregate demand resulting from a change in the quantity of money cannot lead to an increase in output and will, therefore, simply raise the general price-level. If, however, there are unemployed resources available in the economy, the increase in aggregate demand will definitely raise the level of output rather than general price-level. To what extent the increase in aggregate demand will raise output and to what extent it will raise the price-level, will depend upon the extent of unemployment in the economy. Thus when there is considerable unemployment of resources in the economy, there will be the possibility of increase in aggregate demand leading to an increase in output rather than a proportional increase in the general price level. Therefore, we can conclude that the quantity theory of money will not hold if (a) an increase in the quantity of money does not lead to an increase in aggregate demand, but only results in a greater amount of idle cash balances and (b) even if an increase in the quantity of money does raise aggregate demand, but due to unemployed resources in the economy, this increase in aggregate demand results in higher output, rather than higher price-level.

Finally, the question whether velocity of circulation of money is constant or not, is an empirical issue. Some economists consider it a fairly stable and predictable variable, while others think it is quite volatile. Famous economist Kalecki has shown that V is not constant and over short periods of time, it varies with the rate of interest. If the rate of interest is high, holding idle cash becomes costly and people try to manage their transactions with smaller cash balances by using each unit of money more often (i.e. by increasing V). Therefore, the higher the rate of interest, the higher tends to be the velocity of circulation, V. If V is not constant, the conclusion of the quantity theory of money does not hold good.

The classical economists assumed T to be constant because they believed that the economy would always have full employment and aggregate demand would always equal aggregate supply. They assumed that rational individuals would have no use for idle cash balances (i.e. there would be no speculative demand for money) and whatever they save will generate an equal amount of

investment demand in the economy.

Thus we may say that conclusion of the Quantity Theory of Money will hold provided (a) consequent to a change in the quantity of money, aggregate demand changes proportionately i.e. no idle cash is held by people for speculative purpose; (b) when the aggregate demand changes, level of output does not change at all i.e. there is already full employment in the economy and (c) there is no change in V (velocity of circulation of money). On the other hand, it is equally possible that changes in the quantity of money may not affect the price-level at all. This will happen if (i) the whole of the newly pumped money is held as idle cash for speculative purposes i.e. aggregate demand does not increase at all; (ii) in case there is some increase in aggregate demand (proportionate or less than proportionate), this is completely neutralised by increase in output because there are sufficient unemployed resources available in the economy and (iii) the impact of an increase in the quantity of money is neutralised by a compensating change in V. However, these two are extreme possibilities and normally we can expect an increase in the quantity of money leading partly to an increase in the general price-level and partly to an increase in the level of output. Therefore, normally the conclusion of the quantity theory of money will hold, but partly.

There are many weaknesses of the Quantity Theory of Money. It takes M, V and T as independent variables (out of which it assumes V and T to be constant and this may not be correct in reality) and considers only P as the dependent variable. In fact, changes in P may also affect V, T and M. Also, it emphasizes only one function of money i.e. the medium of exchange function and ignores its function as a store of value. Moreover, the rate of interest is completely ignored by this theory. Perhaps the biggest weakness of this theory is that it does not explain how changes in the quantity of money work their way into the economic system and what is the chain of events that follows.

Self-Check Exercises

Note the following points :

1. Because of the speculations motive, aggregate demand may not rise at all consequent to an increase in the quantity of M.
2. Even if aggregate demand rises in proportions to a change in the quantity of M, the price level may remain unchanged if enough unemployed resources are available in the economy.
3. The biggest defect of the Quantity Theory of Money is its failure to explain the channel by which in increase in M bids up the price level.

The Income and Expenditure Approach

It was Keynes who explained the Income and Expenditure Approach according to which changes in the quantity of money work their way into the economic system through a certain process and the net effect of such changes on the price-level depends on a number of 'ifs' and 'buts'. We can describe the sequence of events roughly as follows. An initial change in the quantity of money will affect bond-prices (by increasing the demand for bonds) and the rate of interest since bond-prices and rate of interest are inversely related to each other and are two sides of the same coin. Normally, an increase in the quantity of money may be expected to raise bond-prices and thus lower the rate of interest. A reduction in the quantity of money may be expected to produce the opposite effects viz. a fall in bond-prices and a rise in the rate of interest. A lowering of the rate of interest (caused by an increase in the quantity of money) normally induces producers to make larger investment

because the cost of investment (in terms of the rate of interest) is now lower than before. Here we assume that other factors affecting producers' profit-expectations remain constant. Now, even if consequent upon an increase in the quantity of money, the rate of interest does fall and the investment is stimulated, the extent of rise in aggregate demand will depend upon that in aggregate income which in turn depends on the value of the multiplier. Finally, the increase in aggregate demand will raise the general level of prices provided the economy is working at the full employment level and there are no unemployed resources available in the economy. Thus, we can see that it is not possible to relate changes in the general price-level directly to changes in the quantity of money as the Quantity Theory of Money does. In fact there is many a slip between the cup and the lip.

First of all, an increase in the quantity of money may be neutralised by an increase in idle cash balances and may fail to lower the rate of interest. This will happen if the rate of interest is already so low that people expect it to rise and hence postpone the purchase of bonds. Secondly, even if the rate of interest does fall, it may not stimulate investment if the marginal efficiency of capital also falls due to technological, social, political or economic factors. Thirdly, even if a fall in the rate of interest does stimulate investment, it may not lead to much increase in the level of income if the value of the multiplier is low. Finally, even if an increase in investment does result in a greater increase in income-level via the multiplier and hence an increase in aggregate demand, it may not affect the general level of prices if the level of total output increases in proportion to that of aggregate demand due to availability of unemployed resources in the economy. Therefore, the Keynesian Income and Expenditure Approach describes all the conditions which should be fulfilled if the changes in the quantity of money are to result in proportionate changes in the general price level. Increase in the quantity of money should raise bond-prices and lower the rate of interest. A decline in the rate of interest should induce more investment which should raise the income-level through the multiplier. A rise in the income-level should raise aggregate demand, but not the level of output in the economy so that the general price-level rises proportionately. If any one of these conditions is not fulfilled, the direct relationship between the quantity of money and general price-level breaks. Thus, the Income and expenditure Approach explains how changes in the quantity of money work their way through the economic system step by step and eventually result in changes in the general price-level.

Self-Check Exercises

Carefully note the 'ifs' and 'buts' in the way changes in the quantity of M work their way through the economic system.

1. A change in the quantity of M is expected to change the rate of interest. How ? When it may not ?
2. A change in the rate of interest is expected to affect investment. How ? When it may not ?
3. A change in investment is expected to affect the levels of output and employment through the multiplier process.
4. It is possible that in one situation the change affects only output and in another situation it affects only the price level.

LESSON - 8
CREDIT CREATION

It is common knowledge that people deposit money in the banks.This is done keeping in mind several things. It is not safe to keep large sums of liquid money (currency notes,etc.) at home because they may be stolen. A safer course would be to keep them in a bank and withdraw the amount as and when the need arises. People who save would also like to earn interest on their savings. Cash balances lying idle at home do not yield an income, but if put in the bank they start earning an interest. The rate fo interest depends, however, on the period for which these balances are left with the bank. If it is for a short period of a few months, the rate of interest is low and if it is for a longer period of a year, two years or five years or even more, the rate of interest is higher. The longer the period for which a depositor decides to keep his money with a bank, the higher is the rate of interest. The lending activities of a bank are planned after determining the requirements of cash to satisfy the demands of customers who come to withdraw their money. People also save in order to tide over certian emergencies. Another reason why people save is that a man is able to earn only during the active part of his life and he must provide for old age. Similarly, there are demands which require large sums of money that can not be provided out of monthly income. For instance, the purchase of a TV set or a refrigerator or the construction of a house or the marriage of a daughter, all these require large sums of money. Wise people foresee their further wants and save for them over a period of time and keep their savings in a bank.

But generally all the people who keep their savings in a bank, do not simultaneously want to withdraw them. At a point of time, only a fraction of people approach the bank to withdraw the money in order to meet their needs. Once the bank understands this fact, it can keep a fraction of the cash as reserve and lend the remaining amount to people who demand loans for their business and industry. In this way, the bank can convert idle money into income-yielding assets. Thus, the fact that the people who deposit money in the banks, do not all withdraw the whole amount simultaneously, is the basis of credit creation by the banks. Generally, the amount of credit created is a multiple of the amount deposited with the banks.

In order to understand the process of credit creation, let us take an example. Suppose a businessman seeks a loans of Rs. 1,00,000 from a bank. The bank would ask him to furnish a security. This security can be in the form of fixed assets like a house, a factory or a machine. The purpose or this probe is to establish credit worthiness of the borrower. While granting loans to the farmers or the small entrepreneurs, the banks explore their capacity to repay by an estimate of the value of crop which is likely to be produced or the estimate of the value of the prospective output of a small enterprise. In either case, whether the loan is given against fixed capital or circulating capital, a bank ensures the credit worthiness of the borrower. The value of the capital or circulating capital kept as a mortgage against the loan advanced is generally higher by a certain amount (say 30 per cent) called as 'margin'. The purpose of keeping a margin is that in case a borrower fails to pay back the loan as specified in agreement with the bank, the latter should be able to recover it by auctioning the assets mortgaged with the bank. It is in this sense that it it may be said that banks create credit not out of thin air but against the securities furnished by the borrowers. But whenever a bank has to make a payment, it does not hand over the requisite amount in currency but places the sum in credit of the payee in its account books and hands over a cheque book to him. The payee would, of course, draw cheques for discharging his obligations. Now as these cheques are presented for encashment at the counter, the bank would find itself in difficulty if it had not kept in reserve cash to the tune of the total amount it placed in this manner at the disposal of the borrower. And if all the people cash their cheques, bank will never be able to add to the total supply of money. Some, of course, will do that, but many of the recipients of cheques would be satisfied by depositing them

in their respective accounts in the same bank or what is more likely, in other banks. What if those other banks demand cash from the first bank? Of course they would, but as at the same time they would also be doing similar business, there would be a fair amount of cancellation of inter-bank obligation, so that the first bank when placing depo it money at the disposal of borrower must have in hand enough case to put out to those who cash their cheques and to settle the balance of indebtedness with other banks. This would generally be a fraction of the total loans given. That is why this type of banking is called *fractional reserve deposit banking* and the ratio of the amount of cash held to the total deposits is called 'safe cash reserve ratio'.

The process of creation of credit can be illustrated with the help of an imaginary balance sheet of a bank.

First stage– Depositors deposit money in the bank.

BANK A

Liabilities	Rs.	Assets	Rs.
Deposits	1,00,000	Cash	1,00,000

The bank knows that many of their depositors would let their money lie with the bank. If some withdraw, others would deposit. The law of large numbers would enable the bank to calculate with a fair degree of accuracy what percentage of the total money deposited will be lying idle with the bank at any time. Once the banker knows this, he can set about making profitable use of the idle money. He would, of course, keep a certain percentage as reserve. This is called safe cash reserve ratio. Let us suppose, the bank keeps 20% as reserve against advances and the rest it creates deposits.

Second stage– The banker gives loans.

Liabilities	Rs.	Assets	Rs.
Deposits (primary)	1,00,000	Cash	1,00,000
Deposits (Secondary)	80,000	Assets against loans	80,000
Total	1,80,000	Total	1,80,000

The bank has given loans amounting to Rs.80,000 keeping Rs. 20,000 reserves against the primary deposit of Rs. 1,00,000. Now, suppose, all those to whom cheques are paid by the borrowers deposit their cheques in other banks.

BANK A

Third Stage

Liabilities	Rs.	Assets	Rs.
Deposits	1,00,000	Cash	20,000
		Assets against loan	80,000
	1,00,000		1,00,000

Other Banks

(How the other banks are affected)

Increase in liability	Rs.	Increase in assets	Rs.
Deposits	80,000	Cash	80,000

Now, the other banks in turn would start the process of creation of credit by giving loans all over again and lend what they consider to be excessive cash, keeping with them only a fraction, determined as safe cash-reserve ratio, as reserve. The multiplication process will continue till the whole of Rs. 1,00,000 is absorbed in what the banks consider necessary balance of cash reserve

against deposits and the deposit money would go on increasing in the following manner: Rs. 1,00,000 + Rs. 80,000 + Rs. 64,000 + Rs. 51,200 +..... etc. each subsequent figure being 20 per cent less than the previous one as each time, 20 per cent is retained by a bank as necessary cash reserve. In case, the cash reserve is Rs. 20,000 the banking system, under normal conditions, can satisfy the demands for withdrawals by depositors holding credits worth Rs. 1,00,000. In case, the bank or the banking system keeps Rs. 1,00,000 as case reserve, it can lend to the tune of a total of Rs. 5,00,000 (given 20 per cent as the safe cash-reserve ratio).

The table below bring out clearly the process of credit creation by the banking system. A new deposit of Rs. 1,00,000 created in the 1st series of banks permits after keeping a cash reserve of Rs. 20,000, a creation of new loans and investment to the extent of Rs. 80,000 which is deposited in the second series of banks as new deposit. After retaining 20 per cent as cash reserve, would enable the second series of banks to lend Rs. 64,000. This creates a new deposit of Rs.64,000 in the 3rd series of banks which after retaining Rs.12,800 as cash reserve can create new loans and investment to the tune of Rs.51,200. Thus the process moves on and on till the total deposits reach a total of Rs. 5,00,000 and new loans and investments are Rs. 4,00,000 with a cash reserve balance of Rs. 1,00,000.

PROCESS OF CREDIT CREATION THROUGH THE BANKING SYSTEM

	New Deposits Rs.	New Loans & investments Rs.	Cash Reserve balance Rs.
Ist series banks	1,00,000	80,000	20,000
2nd series banks	80,000	64,000	16,000
3rd series banks	64,000	51,200	12,800
4th series banks	51,200	40,960	10,240
Total	2,95,200	2,36,160	59,040
All the remaining banks Total for the banking system	2,04,800	1,63,840	40,960
	5,00,000	4,00,000	1,00,000

Limits of Credit Creation

There are two limits to the process of credit creation by the banks. They are (a) quantity of cash deposits with the commercial banks and (b) safe cash deposit ratio.

(a) *Quantity of cash deposits with commercial banks*– Since the people have to deposit currency with the banks as the currency deposit, the extent of the cash deposit will depend upon the total amount of state money, viz., currency issued by the central bank of the country. In case, the central bank increases the state money supply by issuing more currency, the quantity of cash deopsit can also increase. The second factor that determines the cash deposit is the banking habits of the people. In underdeveloped countries, banking habits being not very highly developed people prefer to pay the grocer, the washerman, the milkman and several other sundry creditors in cash; but in developed countries, even these payments are made in cheques. Obviously; the quantity of cash required for day-to-day transactions is much lower in developed countries than in underdeveloped countries. In other words, the proportion of total currency which is deposited with the commercial banks in developed countires is higher than in underdeveloped countries and consequently, the limits of credit creation shall also be higher in the former than in the letter.

(b) *Safe Cash Reserve Ratio*– Another factor that limits credit creation is the safe cash reserve ratio. This depends upon the extent to which people are accustomed to the use of credit

instruments in discharge of their business obligations. In other words, the extent of confidence of the public in the banking system determines the safe cash reserve ratio and the latter, in turn, sets the limit to the creation of credit. For instance, if the cash reserve ratio is 20 per cent, it would be possible to expand total credit to the tune of Rs. 5,00,000 with a cash deposit of Rs. 1,00,000. But in a developed country where cash reserve ratio is lower, say 10 per cent, it would be possible to expand total credit to tune of Rs.10,00,000 with a cash deposits of Rs. 1,00,000. The capacity of credit creation by the banking system is thus limited by safe cash reserve ratio.

The discussion makes it clear that banks can lend more than their deposits. Banks also prescirbe for themselves the cash reserve ratios depending upon the experience of the past, the stage of development in banking reached by a country and the degree of confidence the people have in a bank.

But there can be a miscalculation on the part of a bank in determihing the safe cash reserve ratio. What happens in the event of miscalculation?

A look at the balance-sheet of any bank will help us in answering this question. The remarkable fact you will notice will be that most of the liabilities are short period liabilities i.e., money liable to be withdrawn without notice. How does the bank manage to meet its liabilities? The bank conducts its business on the assumption that all the people will not withdraw money at the same time. As some withdraw, there would be others depositing and the bank would required cash to meet only the net outflow. If a bank has been giving loans at a rate far in excess of other banks, it will have to make arrangements to pay cash at the time of demand. Or if the public demand is against a bank so that depositors are withdrawing their money and no new deposits are being made, it will have to take exceptional measures to meet the cash drain. Otherwise, it would not be able to carry on its business by maintaining the normal cash deposits ratio which is normally ten per cent these days.

If a bank finds itself hard pressed for cash, it would realise some of its assets and slow the rate at which it is creating fresh credit. A bank's portfolio of assets should be such that there are assets falling due simultaneously with claims. There should also be certain percentage of short period assets which can be called in as and when more cash is needed. The two considerations which the banker keeps in mind while choosing assets are profitability and liquidity. Liquidity means the ease with which an asset can be exchanged for money at little loss. The liquidity of an asset is determined by the nature of the market on which it is traded. Highly liquid assets other than cash and bank deposits are post office savings, treasury bills and money at call and short notice. A bank is a joint stock company. It has to declare a dividend to satisfy its owners. The rate of interest which a bank pays to its depositors is lower than the rate at which it lends money. The rate of interest it charges from borrowers or the profits it realises on its investments, are in direct proportion to the difficulty, delay and risk of capital depreciation involved. The less liquid the asset, the higher, in general is its yield. A right balance between the opposites-liquidity and profitability-is the hallmark of successful banking. The bank can neither afford to be less liquid nor lose an opportunity to earn profits. But accidents always happen and then the bank has to suspend payments. The bank failures have been none too rare in the history of banking all the world over. Thus, in the interest of stability it is necessary to have check on the power of a bank to create credit. But even if there were no risks of bank failure-as would happen when all the banks are simultaneously expanding depositist-the aggregate of currency is expanding and banks are carrying on their business with judicious care, it would still be necessary to safeguard the economic system against a continuous expansion of bank credit. The need for putting a limit on the expansion of credit and through it controlling the total supply of money arises due to the fact that an increase in the supply of money, unaccompanied by an increase in total output may lead to inflation, i.e., a rise in the general price level. The adverse effects of inflation on the distribution of incomes have been hinted at in section 2 above.

Lesson 1

WHAT IS NATIONAL PRODUCT/NATIONAL INCOME?

NP /NI is a single measure (in monetary terms) of the flow of final goods and services that accrues to the normal residents of a country as the result of their production efforts during a year, (whether carried out at home or abroad), without adversely affecting the initial capital stock of the country.

1.1 **National Product (NP) /National Income (NI) basically is the measure (in monetary terms) of the total amount of goods and services produced by the normal residents of a country during a given period.** The diverse types of goods and services which comprise NP /NI cannot be added together into a single meaningful aggregate except by converting them in money values by multiplying various quantities with the respective prices. Here money acts merely as the unit of account (i. e; as the measuring rod of value) and not as wealth. The expression of NP /NI in monetary terms should not blind us to the quantities of goods and services that the money values represent. Whenever we talk of the NP /NI of a country we always refer to the aggregate of goods and services produced during a given period. For example, when we say that during 1984-85 India's NP /NI was Rs. 1,97,515 crores, this simply means that goods and services worth so much accrued to India as the result of the production efforts of its residents during that year. This aggregate of Rs. 1,97,515 crores consisted of; (a) Rs. 1,45,327 crores worth of consumer goods and services supplied to the households, (b) Rs. 24,062 crores worth of goods and services used by the govt. for providing collective services to the people, (c) Rs. 28,974 crores worth of durable-use capital goods and another Rs. 8,016 crores worth of stocks (raw-materials, semi-finished goods, goods in process, etc.) accumulated by business enterprises, households and the government, and (d) goods and services worth Rs. (-) 6,447 crores exported to other countries. Net exports were negative because during the year in question imports exceeded exports by Rs 6,447 crores.

Thus, the basic thing to remember about NP /NI concept is that it always refers to the quantities of goods and services produced during a given period and money is used merely as the unit of account.

1.2 **Second, NP /NI is a flow.** Production is a process which generates goods and services over a period. Without time period there cannot be any production. Nobody speaks of output at a point of time. Being a flow, production can be measured only for different periods of time. The unit of time for the measurement of NP /NI is generally one year .

1.3 **Third, NP /NI** measures goods and services which **accrue to a country only as the result of its production efforts and it excludes all goods and services received otherwise.** Goods and services can be received by a country as gifts or as aid from other countries or by the use of force as reparation, through piracy, etc. These are not included in the NP /NI measure. Marshall aid given to countries during the post-world-war II period or goods received through U.N. agencies or

from other countries are examples of international gifts or aid. It also does not include goods and services produced illegally. NP /NI measures only the goods and services accrued as the result of the production efforts of the normal residents of a country and not the availability of goods and services as such.

Production refers to the complex of human activities concerned with the creation, with the aid of scarce human and material resources, of good and services capable of satisfying human wants, directly and goods that aid their production, having determinable economic price or cost. This concept of production is known as the comprehensive production concept. This concept underlies the view of NP /NI in capitalist countries. This view has been sanctified by the United Nations and also adopted by India.

National income, according to this concept, includes the following first two categories of goods and services and excludes those mentioned under the third category.

I. Goods and Services Produced by the Market Economy

All goods and services produced for sale by private and public enterprises (small or big) including current services of dwellings are included in NP /NI and evaluated at their market prices.

II. Goods and Services Produced by the Non-Market Economy

A. Foods and other goods produced on the farm for farmer's self-consumption are included in national income and evaluated at their market prices. Rental values of owner-occupied houses and all payments in kind for current services are evaluated on the basis of their market prices.

B. Goods and Services supplied free by government and non-profit institutions are included in NP /NI and evaluated on the basis of their cost.

III. Goods and Services Excluded from NP /NI

A. Unpaid services of housewives and other members of the family including self-services (e. g; shaving, dressing, driving own car, etc.), other "do-it-yourself hobbies" (e.g.; gardening, carpentering, painting, singing etc.), neighbourly advice and cooperation and social services of all kinds are excluded from national income.

B. Current services of consumer durables, properties of the government and non-profit making institutions are excluded from NI.

1.4 Four, **not all goods and services produced during a year are included in NP /NI measure.** It includes only the final goods and services produced during a year and excludes all goods and services used up in the production of the former. In other words, NP /NI includes only the goods and services that finally emerge out of the year's production process and excludes all those used up as materials or ingredients of other goods-i.e., intermediate consumption. For example, NP /NI measure includes only the value of bread and not also the materials and services that have gone into the production of the bread. **In NP /NI accounting, final goods are not to be confused with finished goods. Here the word 'final' only signifies the fact that the goods in question have not been used up in the production of other goods during the year.** When a good or service is used up in the production of another good, the value of the former gets incorporated into the latter.

The former simply ceases to exist. Therefore, counting the final good as well as the goods (and services) that have been used up as materials in the production of the former as the year's production, would be double counting.

For measuring NP /NI the period of accounting is one year. Therefore, the question whether goods are final or intermediate, has to be settled with reference to the accounting period. Goods used up in production during the year are intermediate goods and goods not used up in the year's production process are final goods. Whether goods produced during a year are used as final goods or as materials for the production of other goods during subsequent years is not relevant. From the standpoint of the current year if cement produced during the year is not used up in the production of other goods during the same year, it is a final good even if it is used up as an intermediate good in the construction of a bridge during any subsequent year .On the other hand, if cement produced has been used up in the construction of a building during the same year, it is an intermediate good. Its value having been incorporated into the building, it will not be included in NP /NI again. **Thus, counting the final goods as well as the intermediate goods used up in their production would be double counting.** This is the real significance of the distinction between 'final' and 'intermediate' goods in national accounting.

The goods and services worth Rs. 1,97,515 crores referred to as India's NP /NI during 1984 - 85 were the goods and services made available to the final users -consumers, government, investors and foreign countries and did not duplicate the values of the goods and services used up in their production during the year.

1.5 Five, NP /NI is the aggregate measure of the **goods and services produced during the current year only and does not include any element or past production.** Obviously, old goods (e. g, old houses, old cars, refrigerators, T. V. sets, etc.) produced in some past period cannot be counted in current year's production. Doing so would be double counting. **Secondly,** durable-use capital goods, which aid production for a number of years, are an embodiment of the country's production efforts in the past. As a result of their use in production their productive efficiency dimishes, i. e; they depreciate. This depreciation of capital goods in production is also known as capital consumption. **The part of capital goods consumed (or used up) in current production represents a claim of past production over current production.** The value of the capital goods used up in current production gets incorporated into the value of the output produced during current period. Thus, a part of the newly produced capital goods has to be viewed as a replacement of those used up in production during the current year. Therefore, to get true or net measure of what a country has actually produced during a year we must deduct capital consumption from the final product of the year. The final product net of depreciation, known as the net national product (NNP), **is the true measure of the final goods and services accrued to the country as the net result or its current production efforts, without adversely affecting the country's initial capital stock.**

However, the conceptual issues and the difficulties involved in the measurement of capital consumption are insurmountable and allowances actually made for this purpose are generally based on considerations other than economic logic. Economists, therefore, prefer to present NP / NI in gross as well as net terms. Final product without deducting capital consumption is known as

gross national product (GNP) and final product net of capital consumption is known as net national product (NNP). Thus, we have net and gross versions of NP /NI -NNP and GNP. Rs. 1,97,515 crores was the NNP and Rs. 2,12,914 crores was the GNP of India during 1984-85, the difference between the two figures (Rs. 15,399 crores) being the amount of capital consumption during that year.

1.6 Six, NP /NI is the **measure of the results of the production efforts of the normal residents of a country, whether these production efforts are carried out at home or abroad.** In other words. the concept of NP /NI is the measure of production due to national resources, irrespective of where this production takes place. On the other hand, there is a territorial concept of production, according to which whatever production takes place within the territorial boundaries of a country, irrespective of who participated in this production and to whom the product belongs, is known as the country's domestic product.

What is the relationship between these two concepts of production? Let us first imagine a country which has no economic relations with other countries in the sense that neither it permits foreign productive resources to engage in production on its territory nor does it permit its own resources to participate in the domestic production of other countries. It is evident that whatever production takes place within the territorial boundaries of such a country will be entirely the result of its own productive resources. Therefore, the domestic product (DP) of such a country will also be its national product (NP). However, in today's world, it is difficult to find such a country. Normally, productive resources of most countries participate in each other's domestic production, though the degree of this participation varies widely among different countries. As a result, a part of the DP of such countries belongs to foreigners as the reward for the factor services rendered by them. On the other hand, such countries may also have similar counter-claims over several other countries.

Even in such a case, if the factor incomes payable by a country to the Rest of the World (ROW) exactly equals factor incomes receivable by it from the ROW, its NP will still equal its DP. However, if the factor incomes receivable from and factor incomes payable to ROW are different, as is normal, NP must be different from DP. If a country's factor incomes receivable from the ROW are greater than the factor incomes payable by it to the ROW, its net factor incomes from ROW will be positive and as a result its NP will exceed its DP by the same amount. On the other hand, if factor incomes payable by a country to the ROW exceed factor incomes receivable by it from the ROW, the net factor incomes of the country from the ROW will be negative and as a result its NP will fall short of its DP by this amount. Thus;

GNP = GDP plus net factor income from ROW.

NNP = NDP plus net factor income from ROW

Let us note that while the amount of capital consumption accounts for the difference between the gross and net concepts of NP as well as DP, the amount of net factor income from the ROW accounts for the difference between the concepts of NP and DP Thus:

NNP = GNP minus Depreciation

NDP = GDP minus Depreciation

GNP = GDP plus net factor income from ROW

NNP = NDP plus net factor income from ROW

During 1984-85 India's GDP was Rs. 2,14,385 crores. During the same year Rs. 2,073 crores was payable by India to ROW as factor income (that is Rs. 113 crores as compensation of employees and Rs. 1,960 crores as property and entrepreneurial income), while it claimed only Rs. 602 crores as factor income from ROW. In other words, during 1984-85, India's net factor income from ROW was (-) Rs. 1,471 crores. Consequently, India's GNP (= GDP + net factor income from ROW) was Rs. 2,12,914 crores, (= Rs. 2,14,385 + (-) 1,471 = 2,12,914), while NNP amounted to Rs. 1,97,515 crores (= 1,98,986 + (-) 1,471 = 1,97,515).

Besides labour income, factor incomes earned abroad include (a) profits derived from the operations of branch plants and offices abroad, and from the ownership of foreign subsidiaries, (b) dividends from the ownership of foreign stocks; (c) interest on foreign (government and private) bonds, foreign mortgages and saving accounts; and (d) rents and royalties from foreign properties and rights.

Summary

1. NP is basically a **measure of goods and services produced** and money is used merely as the unit of account to add them together into a meaningful aggregate.

2. It is a measure of goods and services accruing to a country only as the result of **production** and excludes goods and services received otherwise.

3. It is a measure **only of the final goods and services produced** and does not duplicate the values of the intermediate goods and services used up in their production.

4. NP, being a **measure only of currently produced goods and services,** does not include any element of past production either in the form of old goods or in the form of capital consumption. Thus, NNP is the real measure of the country's current production. However, because of the conceptual issues and practical difficulties involveed in the measurement of capital consumption, economists prefer to present NP in **gross as well as net terms.** Thus, we have two basic concepts; GNP and NNP.

Finally, NP is the measure of goods and services **produced by the country's national resources, irrespective of where they work; at home or abroad.** NP, therefore, equals DP plus net factor income from ROW.

Thus, we have four product aggregates distinguished on the basis of inclusion or exclusion of (1) net factor income from ROW (National and Domestic Products) and (2) Capital consumption (Gross and Net Products).

II

CLASSIFICATION OF THE PRODUCT AGGREGATES ACCORDING TO BASIS OF VALUATION;

Market Prices And Factor Cost Valuation Basis

2.1 Goods and services which constitute any national or domestic product aggregate have necessarily to be valued in terms of market prices in order to add them together into a meaningful aggregate. However, market prices of most goods and services include taxes such as sales tax, excise duties of various types, custom duties, property taxes, etc. Such taxes, which are collected from or through sellers and which can be shifted to the buyers through higher prices, are known as indirect taxes. Taxes of this type do not affect the size of incomes directly. They affect incomes only indirectly through their price-increasing effect-by reducing the purchasing power of money

2.2 When taxes are levied on the sale or production of goods, their market prices rise. The tax part of market prices is collected by the government and the rest accrues to the producers as factor incomes. Thus, NP valued at market prices actually paid by the purchasers in higher than what accrues to producers as factor incomes by the amount of indirect tax revenue collected by the government. As a result we have two alternative valuations of the product aggregates; one in terms of market prices paid by the purchasers (which include indirect taxes) and the second, in terms of factor incomes (i.e., market prices excluding indirect taxes). Any product aggregate NP or DP. valued at market prices, states the value of the product aggregate in question from the viewpoint of the purchasers while the same product aggregate valued at factor costs or factor incomes, states its value from the standpoint of the producers what it costs them in terms of factor incomes.

2.3 Government also grants subsidies to enable producers to sell certain goods below their factor costs. Consequently market prices of the subsidised goods are lower than their factor costs. Subsidies thus act like negative indirect taxes. However, the amount of subsidies paid in any economy is normally much less than the total revenue from indirect taxes. As a result indirect tax revenue net of subsidies is always positive. Therefore, all the gross and net national and domestic product concepts have two alternative valuations; one at market prices and the other in terms of factor incomes or factor costs. The amount of indirect taxes net of subsides (-net indirect taxes) is the difference between the two alternative valuations of any product aggregate. For example, India's GNP at market prices during 1984-85 was Rs. 2,12,914 crores. During the same year government's revenue from indirect taxes amounted to Rs. 30,692 crores and subsidies paid by the government amounted to Rs. 7,195 crores. In other words, the amount of net indirect taxes (i.e., net of subsidies) came to Rs. 23,497 crores. Accordingly, India's GNP at factor cost during the year amounted to Rs. 1,89,417 crores (i.e., 21,914 - 23,497 = 1,89,417) **Similarly, by deducting the amount of net indirect taxes from any product aggregate valued at market prices we can derive the corresponding product aggregate valued at factor cost.** Thus, we have four product aggregates valued at market prices - GNP, NNP, GDP and NDP and their four counterparts valued at factor cost.

III

FROM NATIONAL PRODUCT TO NATIONAL INCOME

3.1 In out discussion so far we have been using the terms 'product' and 'income' interchangeably. The reason for this is very simple. In a modern economy instead of rewarding factors for their contributions in kind they are paid in money. Only in a few cases, the output produced is itself shares among the participants in production; for example, a part of the wheat produced on the farm is consumed by the farmer's family or given to farm labourers in lieu of or in addition to money wages. The normal practice, however, is to reward participants in production in terms of money incomes, rather than in kind.

3.2 In section 2, we have explained in detail how (1) gross value added by a production unit gets disbursed into capital consumption allowances, indirect taxes and factor incomes (that is, wages, rent interest and profits), (2) the sum of the gross values added by all the production units located in a country equals GDP, and (3) the sum of the factor incomes, the capital consumption allowances and indirect taxes disbursed by all the production units equal GDI. Therefore, each of the eight product aggregates has an income counterpart which details the disbursement of receipts from sale, actual or imputed, into factor incomes, capital consumption allowances and indirect texes. Thus

AT MARKET PRICES	AT FACT OR COST
GNI obverse of GNP	GNI obverse of GNP
NNI obverse of NNP	NNI obverse of NNP
GDI obverse of GDP	GDI obverse of GDP
NDI obverse of NDP	NDI obverse of NDP

IV

DIFFERENT PRODUCT / INCOME AGGREGATES AND THEIR INTER - RELATIONSHIP

4.1 Gross And Net National Product / Income Aggregates

GNP is the aggregate value of all final goods and services accrued to a country as the result of the production efforts of its residents in the course of a year. GNP is a gross measure of current production of the country because it includes consumption of fixed capital. Capital consumption is a measure of the part of fixed capital equipment used up in current production. In other words, capital consumption is an estimate of the amount of capital goods that should be replaced in order to keep the country's capital stock intact. NNP is the measure of the final goods and services produced while keeping the country's capital stock intact.

Thus: NNP = GNP minus capital consumption.

All product aggregates, (national, domestic, gross or net, whether valued at market prices or at factor cost) have their income counterparts. Gross national income is the income counterpart of GNP and net national income is the income counterpart of NNP.

Gross And Net National Product / Income Aggregates - At Market Prices And At Factor Cost

4.2 Market prices of most goods include taxes known as indirect taxes. Such taxes raise market prices. The tax part of sale proceeds accrues to the government and the rest accrues as factor incomes. As a result we have two alternative basis of valuation of the product aggregates; one in terms of market prices including indirect taxes, and the other in terms of factors incomes. The amount of indirect taxes net of subsidies is the difference between the two valuations, one includes this amount while the other excludes it. Thus, we can convert any product/income aggregate valued at market prices into the corresponding product/income aggregate valued at factor cost simply by deducting the amount of net indirect taxes (that is, net of subsidies) from the former.

National Versus Domestic Product /Income Aggregates

4.3 As already explained in para 1.6 above, net factor income from abroad is the difference between any national and the corresponding domestic product/income aggregate. By adding net factor income from abroad to any domestic product/income aggregate we can derive the corresponding national aggregate. Net factor income from abroad may be positive or negative. Therefore, national product/income may be smaller or larger than domestic product /income.

Summary

4.4 1. We distinguish between 'gross' and 'net' product and income aggregates, (whether they are national or domestic aggregates and whether they are valued in terms of market pries or factor cost) no the basis of capital consumption. The gross aggregates include capital consumption while net aggregates exclude it. Thus :

NNP = GNP minus Capital Consumption

NNI = GNI minus Capital Consumption

2. All product and income aggregates (that is, gross or net and national or domestic) can be valued either in terms of market prices or in terms of factor cost. The amount of indirect taxes net of subsidies is the difference between the two valuations. Thus :

GNP at factor cost = GNP at market prices minus net indirect taxes

NNP at factor cost = NNP at market prices minus net indirect taxes

Valuation at factor cost is possible only at the level of the economy as a whole. It cannot be applied to individual goods and services.

3. Net factor income from abroad is the difference between any national and the corresponding domestic product or income aggregate; whether gross or net, and whether valued in terms of market prices or factor costs.

Thus

GNP = GDP plus net factor income from abroad.

NNP = NDP plus net factor income from abroad.

NNP at factor cost = NDP at factor cost plus net factor income from abroad.

Other Income Aggregates

Personal Income

4.5 All measures of national or domestic products, net or gross, valued at market prices or at factor cost, discussed thus far are measures of the current productive achievements of a country. Personal income and disposable income are not measures of current production. These are simply the current incomes of persons as direct from factors. Personal income is simply the spendable income available to individuals before payment of personal taxes. Its relation to National Income (at factor cost) is as indicated below :

Net national Income (at factor cost),

That is National Income = Rs. 1,74,018 crores

Deductions		Additions	
(1) Undistributied profits of private corporate sector (net of retained earnings of foreign enterprises)	= Rs. 1,200 crores	(1) National debt intrest	= Rs.4,952 crores.
(2) Corporation profits tax	= Rs. 2,556 crores	(2) Other government transfers	= Rs. 5,729 crores
(3) Enterpreneurship and property income accruing to govt.	= Rs. 4,391 crores	(3) Current transfers from ROW	= Rs. 1,301 crores
(4) Savings of non-departmental enterprises.	= Rs. 2,128 crores		
Total deductions	= Rs. 10,275 crores	Total additions	= Rs. 13,782 crores

Thus, Personal Income equals Rs. 1,74,018 crores plus Rs. 13,782 crores minus Rs. 10,275 crore = Rs. 1,77,525 crores.

DISPOSABLE INCOME

4.6 Disposable Income in simply after-tax personal income. It is known as disposable (personal) income because all tax liabilities having been met, the balance can be disposed of according to the preferences of the income owners. Out of the disposable income, the amount not spent on consumption constitutes saving.

During 1984-85 personal income amounted to Rs. 177525 crores. Out of this government's direct tax revenue from households was Rs. 3238 crores and the government also realised another Rs. 866 crores as miscellaneous charges. By deducting these two amounts from personal income we get disposable income equal to Rs. 173421 crores.

PER CAPITA INCOME

4.7 Per capita income is the average income which every resident of a country could get if the total national income was distributed equally among all the inhabitants. For the year 1984-85 per capita GNP at factor cost was Rs. 831.2 and per capita NNP at factor cost was Rs. 774.6 in terms of 1970-71 prices.

V

CHANGES IN PRICES : NOMINAL AND REAL NATIONAL INCOME

5.1 Goods and services which constitute any national or domestic product aggregate have necessarily to be valued in terms of market prices in order to add them together into a meaningful aggregate. But due to changes in the market prices over time valuation in terms of market prices creates a problem. As a result of changes in market prices, the real magnitudes of goods and services represented by product aggregates of different years, cannot be compared unless they are revalued in terms of the prices of the same year. For example, GNP at current prices (i.e, market prices prevailing during the year in question) was Rs. 39979 crores during 1970-71 and Rs. 212914 crores during 1984-85. Thus at current market prices, GNP of 1984-85 was more than five times the GNP of 1970-71. Does this increase of 1984-85 GNP really represent a corresponding increase in the quantities of goods and services?. The answer is in the negative because prices of most goods and services during 1984-85 were more than 3 times the prices of 1970-71. We cannot ascertain the extent of increase in the quantities of goods and services unless we neutralise the effect of the increase in the general level of prices. With 1970-71 as the base year (i.e., price index 1970-71 = 100), the price index during 1984-85 was around 315. In order to make the 1984-85 GNP figure comparable with that of 1970-71, we deflate the 1984-85 GNP figure of Rs, 212914 crores on the basis of the price index (by dividing the GNP by 315/100). Thus deflated the 1984-85 GNP figure shrinks to Rs. 67582 crores which is only 70% higher than the 1970-71 GNP. In this way, we can deflate any product aggregate and convert it into its constant prices counterpart.

VI

MEASUREMENT OF NATIONAL INCOME

Economic Basis of Different Methods

1.1 The production organisation in the modern world is an extremely complicated affair. Specialisation in production has been carried very far. Today no single producer can claim to have produced the simplest of things entirely by his own efforts. The production of even an ordinary thing like bread consists of a lengthy process involving the productive contributions of

a large number of production units on its way to the finished state. And within each production unit the production process is further broken down into several operations and each operation assigned to a specialist worker and /or a machine. Who produced the bread that you ate at breakfast? Apparently, the baker but in reality, besides the baker, many other producers made their productive contributions at different stage of production before the bread finally emerged at your dining table. The baker must have purchased the flour used for baking bread from some miller. The miller, in turn, must have purchased the wheat from some store. The store owner, surely, must not have grown the wheat himself. He must have pruchased it from some farmer and transported it to his store. The farmer too cannot claim to have produced the wheat entirely by his own efforts, simply because he must have purchased fertilizers, seeds, insecticides etc. from other producers. He must have also used some implements for ploughing, irrigating, harvesting, threshing, etc. Evidently, the end product (i.e, the final product) of this lengthy and roundabout production process is the bread, and not the wheat, the flour and a number or other ingredients used up in its production. None of the production units can claim to have produced the bread entirely by its own efforts. It incorporates the productive contributions of all the production units involved in the process.

1.2 A simple example will prove helpful in clarifying this point. Suppose a wood supplier sells wood worth Rs.1000/- to a bat maker. The bat maker turns the wood into bats and sells the same for Rs. 2000/- to a wholesaler. The wholesaler in turn, sells the same bats for Rs. 2500/- to a retailer. Finally, the retailer sells them for Rs. 3000/- to final users. Evidently, the end product of the whole process are bats worth Rs. 3000/- and not the wood, the bats made by the manufacturer and the bats sold by the wholesaler and the retailer. Secondly, the final product-the bats worth Rs. 3000/- sold to the consumers incorporates the productive contributions of all the production units involved. Assuming that at the very beginning of the production process the wood supplier purchases nothing from other production units so that Rs. 1,000/- worth of wood is the result entirely of his own efforts, the following table presents the productive contributions of the different production units involved in the process :

Production Unit	Value of Gross Output	Value of goods and services purchased from other production Units	Gross value added by the production unit
Wood supplier	Rs.1000	Nil	Rs. 1000
Bat maker	Rs.2000	Rs.1000	Rs. 1000
Whole saler	Rs.2500	Rs.2000	Rs. 500
Retailer	Rs.3000	Rs.2500	Rs. 500
Total	Rs.8500	Rs.5500	Rs. 3000

The end product of the whole production process are bats worth Rs. 3000/- and this is the result of the productive contributions of the four producers, the wood-supplier, the bat-maker, the wholesaler and the retailer. Thus, value of final product must equal the sum of the productive contributions of all the production units involved in the production process. Gross value added by a production unit measures its productive contribution. **Therefore, the value of the final product must equal the sum of the gross values added by all the units involved in the production process.**

1.3 For carrying out its activities each production unit employs basic factors of production (natural resources, capital, labour and entrepreneur) and pays them for their productive contributions in terms of money incomes. The output turned out by a production units is called "gross output" It is called "gross" because it also incorporates the value of the "intermediate products" purchased from other production units. Net output of a production unit equals the value of its gross output minus the value of the intermediate products used up in production. **Net output is the production unit's productive contribution.** Net output is also known as "gross product" or "gross value added". It is gross because it includes consumption of capital equipment caused in the process of producing the output. Gross product or gross value added of a production unit gets disbursed into factor incomes and some non-factor payments as shown below in the Income and Product statement of an imaginary production unit for one year.

Income And Production Account

Income		Product	
1. Indirect taxes minus Subsidies	= Rs. 20,000	1. Sales	= 470,000
		plus	
2. Capital consumption	= Rs. 25,000	2. Net change in inventories	= + Rs. 30,000
3. Factor Incomes			
* Wages & salaries including social security contributions	= Rs. 1,50,000	**equals** 3. Current production	= Rs. 500,000
*Interest	= Rs. 15,000	**minus**	
*Rent	= Rs. 7,500	4. Intermediate consumption	= Rs. 200,000
*Corporate profits tax	= Rs. 22,500		
*Dividends	= Rs. 40,000		
*Retained profits	= Rs. 20,000	**equals**	
Gross Income	= Rs. 300,000	Net output/gross product Gross Value added	= Rs. 300, 000

1.4. Gross Value Added (Or Gross Product), which equals gross output (i.e; sales plus net change in inventories) minus intermediate consumption, gets disbursed into two broad types of income: those relating to factors of production and the rest. Wages and salaries (including social security contributions), interest, rent, profit (which includes dividends, retained profits and corporate profits tax) and mixed incomes of the self employed relate to factors of production and represent "income originationg". Indirect taxes net of subsidies and business transfer payments (i.e; bad debts and charities) are non-factor payments not necessary to enlist the services of factors. These are non-factor costs of production. Deprecation is a provision for merely replacing the worn-out or obsolete capital goods.

Thus :

Gross Product /Gross Value Added = Indirect taxes plus Depreciation plus Factor Incomes

1.4 If we prepare income and product statements for all the production units in the economy and consolidate them into a single statement, we will find that the sum of the gross values added equals the value of the final product and sales and purchases of intermediate products between different production units within the country get cancelled.

1.5 You are already familiar with an income and product account. An income and product account is designed to indicate a firm's contribution to current production and its income payments out of that production. An input-output table can be used to consolidate the income and product accounts of a number of production units into a single account. The advantage of an input–output table lies in the fact that the purchases and sales of intermediate products, which are consolidated in an income and product statement, are presented in it on a 'from whom to whom' basis. Our purpose is to show that within the country purchases and sales of intermediate products by different production units necessarily cancel out leaving only final product.

1.6 With the help of an input-output table we can present the income and product accounts of a number of production units (or industries or sectors) with purchases of inputs and sales of output in greater details. Each production unit (firm, industry or sector) is allotted one column and the corresponding row. The row gives a breakdown of the sales of output (a) to other production units on current account (as intermediate inputs) and (b) to final users (households, government, exports or accumulation). The column, on the other hand, gives a breakdown of inputs (a) purchased from other production units and (b) the primary inputs.

1.7 Let us suppose that there are only 5 production units, A, B, C, D and E engaged in the production of five different goods needed for final uses as well as intermediate uses. The table below presents by hypothetical data to prove the following two points;

(1) Gross value added by each production unit gets disbursed as factor incomes, depreciation and indirect taxes.

(2) At the level of the economy as a whole the sum of the gross values added by all the production units equals the value of the final output, though this equality may not hold at individual levels.

1.8 Column 1 and row 1 provide details of A's sale of output and purchase of inputs. Column 1 shows that A purchased intermediate products worth Rs. 27 lacs from other production units and produced output worth Rs. 60 lacs (i.e., output worth Rs. 20 lacs sold as intermediate inputs to other production units and output worth Rs. 40 lacs sold to final demand). In other words, gross value added by A amounts to Rs. 33 lacs (i.e. value of gross output minus intermediate consumption). Similarly, gross values added by B,C,D and E are Rs. 84 lacs, Rs. 94 lacs, Rs. 42 lacs and Rs. 47 lacs respectively. **It may be carefully noted that while gross value added by a production unit and output sold by it to final demand are not equal, the sum of the gross values added by all the production units (i.e., 33 + 84 + 94 + 42 + 47 = 300) equals the value of the total final output.** Sales of intermediate products by all the units and purchases by them on the same account, being equal, cancel out. Secondly, gross value added by each production unit gets disbursed as factor incomes (i.e., wages, interest, rent and profits), capital consumption and indirect taxes. Thus we can measure aggregate final output produced either (a) as the sum of the productive contributions (i.e. gross values added or net outputs) of the production units engaged in production

or (b) as the aggregate of the goods and services made available to final uses or (c) as the sum of the factor incomes, capital consumption and indirect taxes, etc. Therefore, we have three alternative methods available for measuring NP, that is, the net output or the production method, the final expenditures method and the income method.

DIFFERENT METHODS OF MEASUREMENT

Net Output Method (or The Production Method)

This method is also known is the value added method or the "production" method.

2.1 The final output of an economy is the result of the productive contributions of all the production units that participate in the production process. The productive contribution of a production unit is the gross value added by it to the raw materials or other goods and services that it purchased from other production units. Similarly, the "gross value added" by an industrial division equals the value of its "gross output" minus the cost of the raw materials or other goods and services (-intermediate consumption-) purchased from other branches and used up in production during the period. The net output method views GDP as the sum of "net outputs" (or "gross values added") generated by all the industrial divisions in the country.

2.2 The net output method essentially consists in (1) dividing the economy into broad industrial divisions; (2) estimating the value of gross output produced by each division; (3) estimating the costs of capital consumption and intermediate products used up in production in each division, (4) calculating net product of each division by substracting the value of intermediate products used up in production and capital consumption from the value of gross output; and finally (5) obtaining NDP by aggregating the net products of all the industrial divisions.

Classification of Industrial Divisions

2.3 The most prevalent divisions are agriculture, manufacturing industry, transportation, trade, services of dwellings, professional and other services and government. However, these divisions are variously combined with smaller divisions such as forestry, fishing, mining, construction, communications, electricity, finance. real estate, or they may be variously subdivided. For example, for this purpose the Indian economy has been divided into the following industrial divisions:

A. The Primary Sector

1. Agriculture and Allied Activities.
2. Forestry and Logging.
3. Fishing.
4. Mining and Quarrying.

B. The Secondary Sector

5. Manufacturing.
6. Construction.
7. Electricity, gas and water supply.

C. Transport, Communications and Trade.

8. Transport, Storage and Communications.
9. Trade, Hotels and Restaurants.

D. Finance and Real Estate

10. Banking and Insurance.
11. Real Estate, Ownership of Dwellings and Business Services.

E. Community And Personal Services

12. Public Administration and Defense.
13. Other Services.

2.4 As the second step, the value of gross output of each sector is estimated. This can be done either by computing from the production data the aggregate output of the branch and then multiplying it by, appropriate prices or by directly collecting from business accounts their gross sale proceeds and adding to it the value of the net change in their inventories. The second method is suitable for the organised sectors while the first method has to be used in unorganised sectors of the economy such as agriculture, cottage and small-scale industries, mining, forestry, construction in the rural areas.

2.5 As the next step, we have to estimate the value of intermediate consumption (i.e. materials and services used up in production purchased form other branches) and consumption of fixed capital. The data on these costs are still less comprehensive than the data on the gross value itself. For estimating intermediate consumption different methods are used in different countries. In some countries the absolute amount of intermediate consumption is somehow determined and deducted from the value of gross output to obtain net output. In some other countries the ratio of intermediate consumption to the gross output is determined on the basis of samples. This ratio is then applied to the gross output to obtain net output.

2.6 Net output is also known as gross product. It is gross because it includes consumption of fixed capital caused in the process of producing this output. Therefore, to get net product we have to deduct capital consumption from the gross product. For estimating capital consumption different practices prevail. In USA and Canada rates of capital consumption are defined by tax laws. The same rates are used in the compilation of national income.

Summation of Net Outputs

2.7 Having estimated the net output (gross product) of each branch, all these are summated to obtain gross domestic product. In order to change GDP into GNP we have to add net factor income from abroad. As already explained, net factor from abroad equals the excess of factor incomes receivable from foreign countries over similar factor incomes payable to foreigners. This may be positive or negative.

Conclusion

Thus, we get GNP by adding together the net outputs contributed by all the branches of an economy plus net factor income from foreign countries.

The Income Method

2.8 As explained above, the net output (or gross value added) of a production unit gets disbursed into factor incomes and some non-factor costs of production. We have also shown that the sum of the gross values added (or net outputs) by all the production units located in a country equals Gross Domestic Product (GDP) and the sum of the factor incomes equals Net Domestic Product at factor cost or simply as domestic income. **The income method views GDP as the sum of factor incomes plus nonfactor costs of production (i.e. net indirect taxes, business transfer payments etc.) and depreciation. This method essentially consists in aggregating all factor incomes generated** in the economy during a year and then adding capital consumption and net indirect taxes to get GDP

2.9 The major problem of this method is what to count as income. The key to this problem is: Is the payment (in money or in kind) a reward for a factor's contribution to current production? If the answer is in the affirmative, the payment qualifies to be included in national income and if the answer is negative, the payment disqualifies to be so included.

On this basis the following items are included in NI

1. Wages and salaries (which include bonuses, commissions, etc.), supplement to wages (e.g., employer's contributions to various social security funds) and compensation in kind.

2. Interest payments (including interest earned by insurance companies and credited to insurance policy reserves and net interest paid by banks).

3. Rent which includes net rents from land, buildings, etc, including imputed rents on owner-occupied houses and royalties.

4. Profits-dividends, undistributed profits and corporate profits taxes, including profits of government enterprises.

5. Mixed incomes which include profits of the self-employed (whether taken out or retained in the enterprise) and their incomes in kind (e.g. farm products consumed by the farmers, services of farm dwellings).

The following items do not satisfy the criterion of contribution to current production and are therefore excluded.

1. Transfer Payments (Government and Personal)

Government transfer payments include government interest, social security payments, scholarships, unemployment relief, flood relief and a host of similar payments made for considerations other than contribution to current production. Personal transfer payments include gifts, inheritances, pocket allowances, etc. These go out of one pocket into another but not for producing any output.

Business transfer payments (bad debts, charities, gifts, etc.,) along with indirect taxes, while not factor incomes, are counted in national aggregates at market prices as non-factor costs of production.

2. Financial Transactions and Sales of Old Property (including land)

Sale and purchase of financial assets (e.g. stocks, bonds, mortgages, etc.,) are merely transfer of claims. Changes in the ownership of assets do not produce anything and are therefore excluded. However, commissions of real estate agents and broker- are included in the category of factor incomes because by bringing together the buyers and the sellers they contribute to the flow of current services.

3. Illegal Activities and Gambling

Illegal activities are not included in national income. Incomes of illicit distillers are excluded while those of authorised distillers are included. The decision to do so is completely arbitrary and not based on economic logic.

Gains and losses from gambling are the purest example of transfers–out of one pocket into another without any contribution to current production. The incomes of gambling dens for providing their services to gamblers are also excluded from national income as illegal.

4. Subsidies

Subsidies are negative indirect business taxes. As previously indicated, subsidies are a part of factor incomes but not a part of the market value of goods and services. Consequently they are included in measures of national income based on factor costs but excluded from measures based on market prices.

THE EXPENDITURE (OR FINAL PRODUCTS) METHOD

2.10 The net output method or the production method views NP as the sum of the productive contributions (i.e., net outputs or gross values added) of all the production units that participate in the production process. The income method measures NP in terms of the factor incomes (and some non- factor payments) generated in the production process. The expenditure method (or the final products method) measures NP by tracing the disposition of the final goods and services (the goods and services not used up in production during the year) that the economy in the end gets out of all its activity during the year.

2.11 As already explained, the output which is not used up in production must necessarily be disposed of either for consumption during the year or for adding to the nation's capital stock. Broadly speaking the sum total of consumption and investment equals GNP. Consumption is generally divided into private consumption and public consumption. Private consumption consist of all expenditures of households and non-profit institutions (-charities, labour unions, associations, etc.) on (a) consumer durables excluding land and buildings, (b) non-durables, (c) services including the value of goods and services received in kind and, (d) purchase of government services by consumers. Public consumption consists of the current expenditures of the public authorities on education, health, general administration, law and order, defence, etc.

2.12 Investment is divided into three categories, namely, (a) domestic fixed capital formation, (b) addition to stocks and, (c) net investment abroad. Fixed capital formation consists of durableuse

capital assets (which last longer than a year) such as machines, buildings, factories, roads, canals, land improvements, growth of liverstock, forests, etc. It also includes changes in the amount of work in progress in case of heavy equipment or construction items. Investment in stocks includes changes in the stocks of raw materials, semi-finished goods and even finished goods waiting to be sold. Net investment abroad equals the surplus of exports over imports plus net factor incomes from abroad. **The aggregate value of these final products at market prices equals GNP.**

2.13 GNP does not have to be equal to the expenditures by the nationals of the given country simply because a part of the final products of the country may have been exported to other countries, and coversely, the nationals of the country may have spent a part of their incomes on foreign goods. Only rarely, when exports equal imports will the expenditure by the nationals of the country equal its GNP. Thus, the expenditure total to which GNP is equal is not expenditure by the nationals but the expenditure on NP which will obviously be equal to expenditure by nationals plus expenditure on NP by foreign nations (i.e. exports) minus that part of expenditure by nationals incurred on foreign products (imports).

VII

NATIONAL INCOME AND ECONOMIC WELFARE

The ultimate objective of all our economic efforts is to produce goods and services needed by the people. NP attempts to provide a single meaningful measure, in monetary terms, of the volume of goods and services produced by a country during a given year. An increase in NP, other things remaining constant, implies increased availability of goods and services to the people of the country. Normally, greater availability of goods and services in a country is expected to raise the level of well-being of the people. In the present section we try to answer the question: Is the NP measure a good indicator of economic welfare ? Before we proceed to answer this question it would be desirable to distinguish between economic and non-economic welfare.

Economic Welfare and Welfare in General

1.1 Human welfare is divided into two parts –(1) economic welfare and (2) non-economic welfare.

Pigou defined economic welfare as that part of welfare which can be brought directly or indirectly into relation with the measuring rod of money. Non-economic welfare is that part of total welfare which is not amenable to monetary measurement.

1.2 Economists have always known that NP /NI was not a good measure of 'welfare' in the wider sense of the word. NP /NI cannot be converted into meaningful indicator of total human welfare. Any number of things could make a nation better off without raising its NI/NP, for instance, peace, greater brotherhood among the people, equality of opportunity, more democracy, elimination of injustice and violence, and so on. It is obvious, therefore, that NP /NI cannot be a measure of welfare in general.

NP/NI and Economic Welfare

2.1 Not to speak of total welfare, economists have many reasons why measured NP /NI does not even provide a satisfactory indicator of what it is supposed to measure–i.e; economic welfare. We will discuss these reasons under the following heads:

1. Size of NP /NI and welfare.
2. Distribution of NP /NI and welfare.
3. Composition of NP and welfare.
4. Human costs of production and welfare.
5. Other unresolved issues.

2.2 Size of National Income and Economic Welfare

1. Whenever, we talk of the size of NP /NI and its relationship to welfare, we invariably have in mind the real NP (the volume of real goods and services) and not nominal (or money) NP. An increase in the real NP /NI would imply increased availability of goods and services to the country. Larger the availability of goods and services to a country higher will tend to be the standard of living of the people, other things remaining constant. A doubling of money national income, without any increase in the amount of goods and services available to the people, will not add anything to the welfare of the people. **Therefore, in the context of the welfare significance of NP/NI we always have real NP / NI in mind.**

2. Many items that might be generally agreed to form part of economic welfare, have been excluded from NP estimates on account of practical difficulties of estimation. Services of housewives, services rendered by members of the family to one another, (and a host of other 'do-it-yourself' activities), current services of consumer durables, etc., fall into this category. With economic development the task of furnishing them is taken over by commercial establishments (commercial laundries, tailoring and cleaning establishments, restaurants, etc,). When this happens these activities get included in NP estimates. As a consequence measured NP increases but obviously without any effect on economic welfare. **Therefore, exclusion of such services from NP measure understates economic welfare actually enjoyed by the people.**

3. On the other hand, NP measure includes goods and services which really do not add to welfare. Expenditure on defence is cited as one such example. Many economists are of the view that an expansion in this area of spending means a reduction in national welfare through the diversion of productive resources that could otherwise be used to produce goods and services to satisfy the wants of the consumers.

4. The distinction between intermediate and final products is crucial in connection with the welfare significance of the NP measure. We have already explained that NNP (i.e. GNP minus capital consumption) represents the true measure of the amount of goods and services which the people can consume without adversely affecting the country's capital stock. Therefore, as a measure of sustainable economic welfare we are interested in NNP and not in GNP. However, the precise concept of 'capital consumption' is a complex one on which there is no complete agreement and its measurement in the form of depreciation allowances is not satisfactory.

5. Apart from the complex problem of "capital consumption" there is far less agreement on as to whether a considerable part of the goods and services produced are really 'inputs' into the productive system (i.e. intermediate products) or are 'output' of the system. For example, many economists argue that a large part of public expenditure, such as general administration, law and order, etc, are really 'intermediate products' because without them the productive system cannot function the way it does. Therefore, treating such expenditures as final products is double counting which exaggerates the NP measure. If such services were supplied by the private enterprise, these would be treated as intermediate consumption and NP would be correspondingly reduced, obviously without any adverse effect on the welfare of the people.

There is general agreement that some services of the government are final products and some are intermediate products. However, because of the practical difficulties of estimation all government services are treated as final products. As a result of this double counting the real NP gets exaggerated obviously with its illusory welfare significance.

6. (A) The standard of living is indicated by the amount of goods and services available per head in the economy for consumption. Obviously, for measuring the standard of living, a simple estimate of the national income would not do. One has also to know how many persons there would be to share the national output. The larger the number of people, the smaller would be the per head availability of output. If national income data are to indicate the consumption standards, these must be 'corrected' for changes in population so that we get what is called 'per capita income'. Per capita income is derived by dividing the total national income by total population. Thus, if size of national income increases but the population of the country increases simultaneously in a greater proportion, the per capita income will decline, which means lesser purchasing power and consequently low economic welfare.

(B) Some have suggested that a more meaningful indicator of the well-being of the people is provided by national income per head of the working population rather than total population. The idea is to relate the total product of the economy to the producers alone by excluding the non-working population. Suppose there are two economies with the same per capita income, but different incomes per head of working population. The one with higher income per head of the working population would necessarily be more efficient because it is showing higher labour productivity. Higher productivity of labour is indicative of higher growth potential and welfare in the economy. In this sense national income per head of the working population may tell us more about the growth and welfare prospects of an economy than the simple per capita income.

7. NP estimate, as a measure of economic welfare, is particularly deficient in as much as it does not take into account the human cost of producing the output. Reduction in the amount of effort required to produce a given output, made possible by increases in labour productivity, afford a larger amount of leisure to the people. NP estimates do not include leisure as one of the goods. A given quantity of goods produced with little effort obviously contributes more to the individual's welfare than the same quantity produced with a greater amount of effort, other things remaining constant. Mechanisation, improvements in work safety, technological progress and improvements in production techniques, by raising labour productivity, (that is, by reducing the human cost of production), afford greater amount of leisure (via reductions in working hours) as

well as other goods. For example, if consequent upon an increase in labour productivity, a country chooses to produce the same volume of NP and to enjoy more leisure (by reducing working hours), it would be wrong to say that constancy of NP in this case means a constancy of economic welfare. To the constant NP we must also add the extra leisure. It is a well-established fact that consumers prefer more leisure to more goods when they grow richer. Leisure, like goods, satisfies human needs but NP estimates do not include it. Therefore, measured NP understates economic welfare of the people.

2.3 Distribution of NP and Economic Welfare

Per capita national income is a national average income which could be made available to all members of the society if NP were distributed equally. Per capita income tells us nothing about the actual distribution of NP in the society.

As a general rule we can assert that the more equitable the distribution of income in a society, the higher will tend to be the amount of 'welfare' accruing to the society as a whole. NPs and populations of two countries, A and B, may be the same, but a more equitable distribution of income in A compared to B, will imply a higher level of welfare in A compared to country B.

We could look at the distributional aspect from a different angle. Suppose in a country, as a result of a 10% increase in labour efficiency a factory is able to produce the same level of output by retrenching 10% of the work-force. Assuming further that the retrenched employees do not get new jobs. It follows that the reported NP figure remains unchanged but its distribution becomes more unequal than before, involving a loss of welfare to the society because of unemployment. Therefore, apart from the magnitude of NP, its distribution among the people also affects economic welfare. It is the pattern of distribution which will ultimately determine whether or not the benefits of a larger NP / NI penetrate down to the most needy sections of the society.

2.4 Composition of NP And Economic Welfare

The goods and services included in NP/NI are either meant for current consumption or for accumulation. The part of NP/NI devoted to current consumption contributes towards raising the standard of living immediately. The investment component (primarily consisting of newly created durable-use capital goods) by increasing productive capacity of the country also leads to increased consumption but with a time lag. It takes some time before the newly created capital goods become effective in increasing the production of consumption goods. In other words, while the production of consumption goods raises standard of living immediately, production of capital goods makes for higher future consumption. Since NP includes both types of goods, we can take it to be an indicator of the standard of living that the society may be currently enjoying or heading for it in the future. Therefore, a tilt in the composition of NP in favour of either has different short-term and long-term welfare implications.

2.5 Social Costs of NP And Welfare

There are many features of the market economy that drive a wedge between the market value of goods and their contribution to welfare, ranging from imperfect competition, imperfect knowledge, externalities, to aspects of income distribution that enter into most people's notion of welfare. We know that pollution (i.e. environmental pollution including pollution of the air from

smoke, sulphur dioxide, carbon monoxide, water pollution etc.) has increased sharply as a consequence of industrialisation. Also crimes of violence and other manifestations of social disorder in general have accompanied growth of output. As a consequence anti-pollution measures result in more resources being diverted from production of final goods to the prevention of pollution. NP as presently measured, instead of treating such antidote expenditures as social costs of producting the output, includes them as expenditure on final goods. Obviously increase in NP due to an increase in such anti-pollution expenditures only prevents welfare from falling rather than increasing it. Therefore, NP as measured at present, overstates welfare actually enjoyed by the people when we take note of this aspect.

VIII

NATIONAL INCOME ESTIMATION IN INDIA

Pre-Independence Estimates

Though the work on the measurement of national income in a comprehensive manner developed in this country since the early forties, sporadic studies by individual research workers for determining the level of national income of the country either at a point of time or over a period began in the nineteenth century. The first estimate of national income for the country was prepared by Dadabhai Naoroji for the year 1867-68. Subsequently, a fairly large number of estimates of very uneven quality were made particularly since 1900. However, these estimates cannot be used for long period trend studies because of their limitations, which differ in nature in different cases.

National Income Estimates After Independence

The first official estimate of national income for the Indian Union was prepared by the Ministry of Commerce, Government of India and related to the year 1948-49. The importance of this work, however, received official recognition with the setting up of the National Income Committee in 1949, which published its First and Final Reports in 1951 and 1954 respectively. While the first Report of the National Income Committee included chapters on basic concepts, the uses of national income and the estimates for 1948-49, the Final Report dealt with the availability of data, the methods followed for preparation of estimates, and a detailed chapter on recommendations regarding collection of fresh data for improving the quality of the estimates of national income and also for extending the coverage of such statistics. Since the publication of the Reports of the National Income Committee, the work on the estimation of national income has continued at the official level on a regular basis and not only have the estimates been extended to cover a large number of macro-aggregates but also have improved in quality by using recent basic data as well as by introducing methodological changes.

The National Income Committee presented estimates for three years (1948-49 to 1950-51) both at the current and constant prices of 1948-49. The task of national income estimation was later on assigned to the Central Statistical Organisation (C.S.O.). The C.S.O. is producing annual official estimates of national income in India since 1955.

Until 1967, the CSO prepared national income estimates largely on the basis of the methodology which the National Income Committee has used. This series of estimates, also known as conventional series, provided national income estimates for the period 1948-49 to 1964-65 both in terms of current and constant prices with 1948-49 as the base year. In 1967, revised methodology was adopted and the 'conventional series' was terminated. The revised series began from 1960-61 taking it as the base year. In 1977, the CSO inroduced another series with 1970-71 as the base year. In 1988 a new series was prepared with 1980-81 as the base year. The base year was later on shifted to 1993-94. A new series with 1993-94 is now available. The estimates of the new series are not comparable with the estimates of the earlier series

Methods of Estimating National Income in India

For the purpose of estimation of national income, the Indian economy is broadly divided into the following broad sectors.

1. Agriculture including animal husbandry,
2. Forestry and Logging,
3. Fishing,
4. Mining and Quarrying,
5. Manufacturing (5.1 registered and 5.2 unregistered)
6. Construction,
7. Electricity, Gas and water supply,
8. Transport, Storage and communication,
9. Trade, hotels and restaurants,
10. Banking and insurance,
11. Real estate, ownership of dwellings and business services,
12. Public administration and defence,
13. Other services.

Different methods are used to estimate income originating in different sectors. For making estimates of national income originating from sectors 1 to 5 in the above list, the production method is used. For sector number 6 i.e. construction, expenditure method is used. This sector is subdivided into 'pucca' construction and 'kutcha' construction. Pucca construction includes construction with the help of cement, steel, bricks, timber etc. Kutcha construction includes construction with the help of freely available materials likes leaves, mud etc. In Kutcha construction expenditure method is used. In pucca construction commodity flow method (i.e. net inputs e.g. cement, steel, bricks etc. used multiplied by the prices paid by the builders in is used. For the remaining sectors 7 to 13 of the above list, income method is used However, it should be noted that in all these sectors, estimates of national income are based on sample survey method. Although the data base of estimating national income has improved over the years, it would be wrong to consider it altogether satisfactory.

DIFFICULTIES IN MEASUREMENT OF NATIONAL INCOME IN INDIA

Having obtained a broad idea of the basic data used and the methods used for the preparation of estimates of national income and related aggregates in India, the question which arises in one's mind is about the accuracy of the estimates.

The principal factors which lead to errors in national income estimates can be classified into (1) conceptual and (ii) statistical difficulties.

Conceptual difficulties are those arising from limitations of the concepts used and the efforts made by estimators to fit the available statistics to the conceptual framework of the aggregates. The limitations would arise only when the concepts are still to be standardised. Since accepted definitions of various aggregates are available and details are known about the basic data used in India, it is unlikely that such errors appear in the estimates due to conceptual inadequacies, this is particularly so because the concepts of national income and related aggregates adopted in the Indian statistical system are the same as the internationally recommended concepts with modifications to suit the Indian conditions only when necessary.

Difficulty of double counting

One of the major difficulties as we have already discussed, is that of avoiding double counting. In order to avoid it, the value of raw materials and half finished goods produced and used up in production during the year has to be omitted. Sometimes, the same commodity is partly used as raw material and partly as a final product. For example, cotton is used both as raw material in the production of cotton cloth and partly as an article of final consumption for stuffing quilts and mattresses. The value of cotton which is used as raw material must be deducted from the total gross product, but not that of the cotton which is used as a final commodity. To determine how much of cotton produced in one year is used in one way and how much in the other, is often quite difficult. There are many services, particularly **government services, which are partly rendered to individuals and partly to business.** The services rendered to individuals should be included in national income estimates, while those rendered to industry should be excluded because these will be included in the value of the goods produced by business. As the exact distribution of services in the two uses is not possible, a certain amount of double counting is, therefore, unavoidable.

Existence of a large non-monetary sector in India

The existence of a large non-monetary sector in the Indian economy makes it difficult to measure the value of a large part of the national product. A considerable volume of output in this country does not at all enter into the market and is not exchanged for money. It is either consumed by the producers and their families (as happens in the case of the farm produce) or bartered for other commodities. The money value of this portion is difficult to determine. The value in this case has to be imputed, which introduces a large element of guess work in our estimates.

Statistical Difficulties:

a. Absence of proper data on production :

Peculiar to this country. Our statistics of production in agriculture, mining, industry and services are all of doubtful reliability. Businessmen and producers who are the basic source of this information often do not keep proper and complete records. The smaller producers often do not have even rough idea of how much they produce, what is its value and its costs. The statistics are, therefore, based on very unreliable information. According to National Income Committee "An element of guess work, therefore, inevitably enters into the assessment of output especially in the large sectors of the economy which are dominated by small producers or the household enterprise".

b. Many enterprises in India are engaged in more than one functional industries:

Many enterprises in our country simultaneously perform functions belonging to different occupational categories. They do not keep separate accounts for those different categories. Generally household enterprises perform functions falling in various groups of industries. The agriculturists are often engaged in other occupations in addition to cultivation of land. Separate records of production and income are not kept by these people for each of their diverse activities. This presents a problem in the classification as well as the measurement of national income.

c. Non-availability or reliable statistical information:

The primary data used in estimation are either collected through sample surveys or through routine operations of the official statistical system. In case of data, flowing from the administrative records, the quality of such statistics depends on the reporters who may not always be statistically trained.

There are, on the other hand, certain parts of the economy, especially in the unorganised sectors, for which current statistics are either not available on a regular basis or available only in insufficient detail and the estimates here are prepared with data for bench -mark years and indicators. It is, therefore, possible that in trying to fill up gaps in data in such cases errors are introduced in the estimates.

Also, since not all basic data are available on a regular basis, error is introduced in the national income estimates when different methodologies are adopted for estimating the missing items with the help of information available from benchmark surveys or from data on related characteristics. The quality of the estimates in this case depends on the validity of the assumptions made to compensate for the missing data.

Trends in India's National Income

National Income estimates of India are available at 1980-81 prices for the period 1950-51 to 1992-93. Thus we have comparable data for a fairly long period. From 1993-94 onwards data are available in the new series with 1993-94 as base. The following table summarizes the trends in India's National Income as well as per capita income :

India's National Income and Per Capita Income at Current Prices and Constant Prices

Year	Net National Product as factor cost (National Income) (Rs. crores)		Per Capital Income (Rs.)	
	At current Prices	At constant Prices	At current Prices	At constant Prices
	Old Series (Base: 1980-81)			
1950-51	8,574	40,454	239	1,127
1960-61	14,242	58,602	328	1,350
1970-71	36,503	82,211	675	1,520
1980-81	1,10,685	1,10,685	1,630	1,630
1990-91	4,18,074	1,86,446	4,983	2,222
1992-93	5,46,023	1,95,602	6,262	2,243
	New Series (Base: 1993-94)			
1993-94	6.85,912	6,85,912	7,698	7,698
1996-97	10,89,563	8,47,511	11,544	8,987
1998-99	14,31,527	9,49,525	12,729	9,271

According to the old series (Base 1980-81= 100) the net national produce was Rs. 40,454 crores in 1950-51 and it increased to Rs. 1,95,602 crores in 1992-93. The over all rate of growth comes to 3.8 per cent per annum. However, keeping in view the target laid down in various five years plans, this performance is not at all encouraging, as shown in the following table.

Rate of Growth of National Income

(Annual Percentage)

Plan	I	II	III	IV	V	VI	VII	VIII	IX (1997-2000)
Target Rate	2.1	4.5	5.6	5.7	4.4	5.2	5.0	5.6	6.5
Actual Rate	3.6	4.0	2.4	3.3	5.0	5.4	5.9	6.8	6.0

It is obvious that the rate of increase in national income has always fallen short of the targets laid down in the various plans, except during the first and the recent plans. Beside, there have been fluctuations in year to year growth rates–in some years even it declined. Infact whatever growth we witness in India was in only half of the years of planning; in the rest of the years either there has been no growth or the growth rate was negative. Thus the growth rate has not been consistent. In recent years there has been an accelaration in the rate of economic growth and it has averaged more than 5 percent per annum. This has been to some extent due to the rapid growth of the service sector.

The performance of the economy can be better assessed if we examine the per capita national income. The figures of the per capita income given in above table show that between 1950-51 and 1992-93 i.e. over a period of 42 years, the per capita income (at constant prices i.e. 1980-81 prices) increased from Rs. 1127 to Rs. 2243 which was less than the double. The increase in the per capita income over the period of planning has been at the rate of 2 percent per annum. This is by all means highly unsatisfactory. There have been some years in which it either declined or remained constant. However, during the last five years or so the rate of increase in per capita income has been about 4.8 percent per annum.

The rate of growth in India has been very low as compared to what is required to raise the living conditions of the people. It has not made any dent on the poverty in India which, according to some studies, infact, has increased. The rate of growth in India has been among the lowest in the group of the fast developing countries.

National Product by Industry of Origin

Goods and services are produced in different sectors of a country. In other words, national income originates from the different sector e.g. agriculture, industry, trade, transport, services etc. Therefore it is worth while to examine the industry–origin of the national income and examine whether there have been structural changes in the industry origin of the national income.

The indian economy is broadly divided into three sector, namely primary sector, secondary sector and teritiary sector. The primary sector includes, agriculture animal husbandry, forestry, fishing, mining etc. The secondary sector comprises manufacturing, constructions and electricity, gas and power supply. The tertiary sector includes trade, transport and communication, banking and insurance and services etc. Composition i.e. industry–origin of the national income explains the relative significance of the different producing sectors.

The following tables gives the industry-origin of the national income.

Gross Domestic Product by Industry of Origin in India
(Percentage Distribution)

Industry	1950-51	1980-81	1990-91	1998-99
Primary	56	40	33	29
Secondary	15	24	28	24
Tertiary	29	36	39	49
Total	100	100	100	100

Note : The figures given the table for the years 1950-51 to 1990-91 are based on old series (i.e. 1980-81 prices) and the figures for the year 1998-99 are based on new series (i.e. at 1993-94 prices)

It would be seen from the table given above that there has been a considerable change in the industry–origin of the gross domestic product since 1950-51. The share of the primary sector (of which the agriculture in the main constituent) which was 56 per cent in 1950-51 has now declined

to 29 per cent in 1998-99. However, agriculture sector still-remains the single largest sector in terms of its share in the India's net domestic product. The share of the secondary sector in India's gross domestic product has increased from 15 per cent in 1950-51 to 24 percent in 1998-99. The share of the tertiary sector has increased from 29 per cent in 1950-51 to 49 per cent in 1998-99.

There is a big increase in the various constituents of the tertiary sectors e.g. transport, communications, trade, banking and insurance and services. Though the net domestic product data by industry–origin are not comparable but some broad conclusions may be drawn from the trends given in the table above. Firstly, though the share of the agriculture in gross domestic product has declined over the time, but it still remains the predominent economic activity. Secondly, the rate of growth of the secondary sector has not been as fast as that of the tertiary sector, the share of the unregistered manufactuing sector i.e. small and tiny units has declined. Thirdly, the growing share of the transport, communications, banking and insurance to the gross domestic product reflects the expansion of economic infrasture in the country. To sum up, since 1950-51, the Indian economy has become less geared to the primary sector and more attuned to the secondary and tertiary sectors.

IX

NATIONAL CAPITAL: CONCEPT AND MEASUREMENT

The Concept: Real And Financial Capital

1.1 To the layman capital means anything which yields him an income, by using it himself or by lending it to others. To him capital can mean money, real goods, or paper claims against other people or institutions (e.g., shares, bonds, NSCs, bank deposits, etc.). A man is considered rich if he has a substantial bank balance or securities. Ownership of large estates or other physical goods, stocks, mortgages and other debt instruments is treated as a position of wealth. Out of these only producers' goods which aid production are capital goods in the economic sense. Both money and securities (paper claims of all kinds) are redundant in that they merely represent claims of ownership against real capital but are not capital themselves. Counting the shares held by the shareholders of a cycle factory as well as the real capital of the factory is double counting.

1.2 Capital in the economic sense is a factor of production consisting of producers' goods (i.e., durable-use goods as well as single-use goods, man-made goods and goods provided free by nature) including such diverse things as proven reserves of natural resources of all kinds (e.g. oils, minerals, ores, etc.), machines, buildings, structures, assembly lines, automobiles, factories, radio and television stations, and business stocks of finished and unfinished goods and materials, which are used in production. Economists distinguish between durable-use producers' goods made by man and those provided free by nature. Man-made producers' durable-use goods are called fixed capital goods while durable-use goods provided free by nature are called land. Land includes not only agricultural land used for agriculture or land used for building sites and similar other purpose but also proven reserves of natural resources of all kinds. Fixed capital includes buildings, machine,

tools, transport equipment, and so on.

1.3 What precisely is the basis of distinction between land and fixed capital? Broadly speaking we may say that in its economic sense land includes all those durable-use producers' goods which are provided free by nature. Fixed capital, on the other hand, includes all durable-use capital goods which are man-made. The supply of fixed capital goods can be readily increased with human effort. In contrast, the supply of land cannot be readily increased with human effort. This is the difference between the two types of capital goods.

Composition of National Capital

Capital goods are divided into three categories, fixed capital, land and inventories.

Fixed Capital Goods

2.1 This category consists of all such man-made capital goods which, if properly maintained and looked after, can aid production for a long period of time. Factories, buildings, all kinds of machines and implements, transport equipment, power-houses, radio and television stations, bridges, roads, canals, etc. are all such capital goods which can go on being used in production again and again for considerably long periods. Fixed capital goods form a substantial part of the national capital of advance economics. Larger the stock of fixed capital in an economy, the higher, other things remaining constant, will tend to be its capacity to save, invest and grow.

Land-Natural Resources.

2.2 This category consists of durable-use producers' goods which are provided free by nature and whose supply cannot be readily increased with human effort. This category includes proven natural resources such as agricultural and urban land, mineral deposits, oil reserves, rivers, lakes, etc. whose productive lives do not terminate with a single use but extend over long periods of time. Different countries have widely different endowments of natural resources. Countries with abundant natural resources tend to grow faster than the ones poorly endowed with such resources. Civilisations developed first on the banks of rivers where fertile land was easily available. The development of natural resources into productive capital has been the result of hard work and use of skill over centuries. Natural resources are an indispensable form of capital but these can be made more effective by human effort. It is a well-known fact that South American continent has a richer endowment of natural resources than the North American continent but due to lack of adequate manpower the former has remained less developed.

Inventories

2.3 This category consists of man-made single-use capital goods such as "goods is process" (i.e., goods actually undergoing production), goods passing from one stage of production to another, stocks of semi-finished goods, raw materials and stocks of finished goods waiting to be sold to the final users. These goods form a kind of buffer stock to maintain regularity of production.

Measurement of National Capital

Introduction

3.1 It bears repitition to say that capital, in the economic sense, consists of capital goods (single-use goods, durable-use goods and man-made goods as well as those provided free by nature) which aid production. It is this stock of real capital goods which we call national capital. Since this stock includes diverse things, it can be measured only in terms of its money value.

3.2 During the last two centuries, as a result of various technological changes, inventions and improvements in production techniques, the advantages of producing on a large scale have been constantly growing. In order to take advantage of these changes, the typical size of a firm in most industries has also been growing. Consequently, the amount of capital goods needed for setting up a firm has grown so much that today it is neither desirable, nor even feasible to mobilise it even on the basis of partnership arrangements. Today such a huge amount of capital can be mobilised either through borrowing (i.e., through the issue of bonds) or by issuing shares. The net result of this has been that capital equipment of the community, by and large, has ceased to be owned directly by private persons except for land and houses. They have mostly given up their direct control over capital goods and have instead acquired titles to ownership, which are only pieces of paper, without any particular goods being identifiable to which they correspond. Moreover, shares held by a modern shareholder are usually spread over a number of companies and as a result his connection with any particular capital goods has practically disappeared. The capital owned by any individual capitalist usually includes some actual goods (houses, land, consumer durables, etc,) but for the most part it is likely to consist of paper titles to ownership-shares, bonds, etc. How do we go about measuring national capital in such a situation?

Alternative Methods of Measurement

3.3 We can look at capital either as (1) a superstructure of titles and rights to ownership by means of which the real capital goods are attributed to their ultimate owners or as (2) a factor of production consisting of real goods being used in the production process. From the stand-point of ownership, national capital is the sum of the net assets (i.e. assets minus liabilities) of the normal residents of a country (including institutions and the public authorities). On the other hand, we may look at capital as the aggregate of producers' goods at the disposal of the country. In this case we have to bear in mind that while paper tittles are assets for one set of people, the same are the liabilities of others and consequently assets and liabilities between members of a closed group cancel out. Let us explain these two aspects of capital with a simple example.

3.4 Let us suppose a closed group of shareholders and bond holders of a company who have no investment or debt liability outside this group. Similarly the company also has no outstanding trade debt either way nor any bank debt. We further suppose that the shareholders and bond holders own Rs. 15 crores of shares and bonds of the company and also have in their private possession some land, houses and consumer durables, worth Rs. 2 crores. We can present this information in the form of two separate balance sheets and a joint balance sheet as shown in the table below:

	Assets		liabilites	Net Assets
1.	Company Real goods	Rs. 15 crores	Shares and bonds Rs. 15 crores	Nil
2.	Share holders & Bond holders. Real goods Shares and bonds	Rs. 2 crores Rs. 15 crores	Nil	Rs. 17 crores
3.	All combined Real goods	Rs. 17 crores	Nil	Rs. 17 crores

3.5 Since a company from the standpoint of ownership, is simply a means through which a number of people can hold capital goods in common, its net assets are nil. After meeting other obligations (bank debt, trade credit, etc.), the capital equipment of the company belongs to its shareholders and bond holders. The net assets of the shareholders and bond holders are worth Rs. 17 crores. Alternatively, shares and bonds, being assets for the shareholders and the bond holders and liability for the company, cancel out, leaving real capital goods worth Rs. 17 crores in the possession of the group as a whole, Thus, if we were to take any self-contained group of individuals and institutions (even a country), not having any debts or claims outside the group, debts and obligations between the members of the group cancel out, leaving only the value of the real goods as the balance.

3.6 National capital can be similarly measured either as the sum of the net assets owned by all the individuals, institutions and the public authorities comprising the nation or as the aggregate of real capital goods possessed by the nation. However a modern nation is not a closed group. A modern nation has not only trade relations with other nations but also foreign investors (shares and bond holders) participating in companies located in its territory as well as its residents similarly investing in foreign countries. There is absolutely no reason to expect exports always to equal imports. Normally, exports will either exceed or fall short of imports and consequently the country in question will have a debt obligation due by or due to foreign countries on this account. Similarly there is no reason to expect investment by foreigners in the domestic economy to equal investment by the residents of the country in foreign countries. In other words, on investment account also the country will have some net obligations due from or due to foreigners. In this case also the paper claims between residents of the country will cancel out, leaving as balance the value of capital goods possessed by the nation plus or minus net obligations due from or due to foreign countries. Alternatively, national capital can be measured as the sum of the net assets of all individuals, institutions and the public authorities. In this case net assets will be inclusive of foreign assets and liabilities.

3.7 We illustrate below the alternative approaches to the measurement of national capital with

a concrete example. The table below, taken from the 'Framework of the Indian Economy' by Hicks and others presents the balance sheet of India, excluding land values, as on 31.3.72. The figures are in crores of rupees at 1971- 72 prices.

3.8 The net assets of the private sector were worth Rs. 103000 crores and that of the public sector amounted to Rs. 14600 crores. These add up to Rs. 117600 crores. Alternatively, government debt of Rs. 11200 crores, being an asset for the private sector and a liability of the public sector, cancels out. Similarly, notes and coins worth Rs. 5000 crores, being assets for the private sector and liability of the public sector, also cancel out. The two sector own real goods worth Rs. 126300 crores (Rs. 88400 crores plus Rs. 37900 crores). At the same time the private sector owes debt to foreigners worth Rs. 7100 crores and the public sector also owes debt worth Rs. 1600 to foreigners. This foreign debt worth Rs. 8700 crores has to be deducted from the value of the real goods worth Rs. 126300 crores possessed by the economy. Thus, the value of national capital was estimated to be Rs. 117600 crores as on 31.3.1972. This estimate, however, does not include land values.

National Balance Sheet of India as on 31.3.1972

(at current prices)

Assets		Liabilities		Net Assets
Private Sector				
Real goods	88400			
Govt. Debt	11200			
Notes and coins	5000			
External assets	300	External obligations	1900	103000
Total	104900		1900	103000
Government				
Real goods	379000	Internal debt	11200	
Gold and currency reserves	500	Notes and coins	5000	
External Assets	800	External obligations	8400	14600
Total	39200		24600	14600
Whole Economy				
Real goods	126300			
Gold and currency reserves	500			
Other external assets	1100	External obligations	10300	117600
Total	127900		10300	117600

Notes : Because of the uncertainity about the estimates of land values, the above table does not include land values.

Difficulties in the Measurement of National Capital

4.1 (1) The information available for preparing an estimate of national capital is even worse than the information available for calculating national income. As a result round about and imperfect methods have to be resorted to. Because of this the proportion of guesswork in the calculations of national capital is abnormally high.

(2) The most difficult problem is the valuation of capital assets. The greater part of national capital consists of durable-use goods, land and buildings, vehicles, machines, and so on. Many of these goods may not have been sold since long and may not be likely to be sold in the near future. On what basis should one value such goods? Secondly, there are several purposes (e.g. in connection with the inheritance of property, for taxation, etc) for which such goods may be valued. However, the methods of valuation vary with the purposes of valuation. Which of the values to choose?

(3) The problem of valuation arises with paper claim (shares, govt. securities, bonds, etc) also, it is most likely that the same claims. which appear on the liabilities side of one balance-sheet and on the assets side of another, will be assessed differently in the two accounts with the result that they will not cancel out.

APPENDIX

NATIONAL INCOME THEORY AND PRACTICE

Economic and Non-Economic Production

DIFFERENT CONCEPTS OF ECONOMIC PRODUCTION

1.1 Broadly speaking there are three concepts of economic production. These are known as (1) the comprehensive production concept, (2) the restricted material production concept and (3) the restricted market production concept. Since our primary purpose is to explain national income measurement in India we shall mainly concentrate on issues and problems in the context of the comprehensive production concept and dispose of the other two concepts summarily.

1.2 Restricted Material Production Concept

Adam Smith, the father of modern economic theory, restricted the area of economic production only to activities which resulted in the creation of tangible, material goods. For example, the activities of a farmer result in the production of food grains; ,the activities of a blacksmith result in the creation of implements needed by the farmers and others, a textile factory produces cloth and so on. Adam smith considered such activities productive. But he described as unproductive the activities which did not result in the creation of material goods. For example, menial servants, churchmen, lawyers, doctors, learned men of all kinds; players, musicians, singers, dancers, etc; were described as unproductive because their activities did not result in the creation of any material goods which could be accumulated and used in production in the subsequent period.

Services perish in the very act of their performance. Adam smith's main concern was with the process of accumulation and growth. Since services, by their nature, could not be stored (accumulated) over time, he excluded them from the area of economic production. However, in economics such a concept of production is too narrow.

1.3 The Restricted Market Production Concept

This concept includes material goods as well as services in the area of economic production but only to the extent they are produced for sale in the market. It excludes from the area of economic production material goods as well as services which are produced not for sale in the market. This concept underlies the greater part of capitalist economic theory but is not used for the purpose of national income measurement by any country. Therefore, we will not discuss this concept any further. However, the student should know that with industrialization unpaid goods and services are progressively replaced by paid ones, and thus, the area of market production widens. For example, in industrially advance countries activities such as washing, mending and stiching of clothes, cooking, care of children, etc, which in traditional economies are performed by housewives are increasingly provided by commercial establishments, labour-saving equipment, domestic servants, etc.

1.4 The Comprehensive Production Concept

This concept underlies national income measurement in capitalist countries and has also been sanctified by the United Nations. National income concepts and measurement in India also are based on this concept. According to this concept, the distinction between material goods and services as well as the distinction between production for the market and production for direct use or for barter are not relevant to the issue of what constitutes economic production. It views economic production as the process concerned with the creation of economic values in the form of goods and services capable of satisfying human wants and having a determinable monetary price or cost. Thus, this concept includes in the area of economic production material goods as well as services, whether produced for self-consumption, barter or for sale in the market, created with the help of scarce human and material resources and having economic value (i.e., value-in-exchange) subject to the condition that they have a determinable monetary price or cost. More specifically, material goods and services which:

(1) are created with the use of scarce human and material resources;
(2) are capable of satisfying human wants directly or, as production goods, indirectly;
(3) are relatively scarce in relation to the demand for them and therefore, have economic value; and
(4) either have a definite monetary price or cost or can be given one by imputation, are included in the area of economic production.

1.5 Conceptually, all goods and services which satisfy the first three conditions qualify as economic goods. However, because of the practical difficulties of evaluation and non-availability of reliable statistics the area of economic production is restricted only to those goods and services which either have a definite monetary price or cost or can be given one by imputation. Thus, according to this concept goods and services which, otherwise qualify as economic products but cannot be imputed a monetary value are excluded from the area of economic production. There

are goods and services in whose case neither the market price nor the cost basis of evaluation is applicable. For example, can a mother's love and care be compared with the services rendered by a commercial creche? Obviously, such market analogies do not provide a fair monetary measure of a mother's services. Secondly, in case of some goods and services it may not be easy to obtain reasonably reliable information about their quantities, qualities, varieties, etc. All housewives do not perform the same duties; some of them devote themselves exclusively to domestic work while others help the male members in the fields or household industries, some work as part-time labourers with other households while others do spinning, stiching, mending of clothes in addition to kitchen work. How do we evaluate such goods and services? Therefore, as a practical solution of these problems, the area of economic production is further restricted to only such goods and services which either have a definite monetary price or cost or can be given one by imputation.

TREATMENT OF DIFFERENT TYPES OF GOODS AND SERVICES IN PRACTICE

1.6 How different groups of market and non-market goods and services are treated under the comprehensive production concept is explained below:

(1) Goods and Services Produced by the Market Economy

1.7 This category includes the goods and services produced by public and private enterprises which normally sell their outputs in the market for a price. Public enterprises in India include departmental enterprises such as, railways and posts and telegraphs and non-departmental enterprises include all other autonomous undertakings in production and finance. Private enterprises include all small and big establishments which produce to sell in the market. Renting of dwellings is also considered as a business enterprise and therefore, is included in this category. These goods and services are evaluated at their market prices.

(2) Goods and Services Produced by the Non-market Economy

A. Goods and Services Produced by Producers who Directly Consume a Part or Whole of their Outputs in their Role as Consumers.

1.8 Farmers normally consume a part of their farm produce directly so that this part of their outputs fails to appear on the market. The farmer has the option of choosing between retaining a part of his output for self-consumption directly or selling his entire output in the market first and then buying back what he needs for his own consumption. Thus, the retained output has a definite market price. Therefore, foods and other goods produced on the farm for the farmer's own consumption are included in the farmer's total output at their market prices.

B. Unpaid Services of Owner-occupied Dwellings

1.9 A large number of people live in their own houses and thus directly consume their rental services without going through the market. This is the case of direct consumption by producers similar to the case of farmer's self-consumption discussed above. However, while farmer's self-consumption constitutes production and consumption during the same year, dwelling houses constitute investment during the year of their construction and the rental services rendered by them during the subsequent years constitute production and consumption of capital services of

those years. In other words, rental services of dwellings during the years of their use are treated as current capital services and. included as such in the outputs of those years. Owner-occupied houses are imputed rental values on the basis of the rental values of similar rented houses in the same area.

C. Unpaid Services of other Consumer Durables.

1.10 Motor cars, refrigerators, television sets, radios, pianos, furniture, paintings, musical instruments, household appliances, etc., are examples of consumer-durables. These goods involve substantial initial investment and render services to their owners for a number of years. They are similar in nature to dwellings and in principle there is absolutely no justification for treating their services differently. When some of these consumer durables are actually rented, they are treated as capital goods and their current services rendered in each year of their use are included in the outputs of those years but when they are used by owners these goods are assumed to be entirely consumed in the year of their acquisition itself even though they continue to render services for a number of years. In other words, services rendered by consumer-durables (other than dwellings) to their owners in the subsequent years are excluded from the outputs of those years.

1.11 The argument for including the services of consumer-durables rendered to the owners in the outputs of subsequent years is very strong but the difficulties of doing so are insurmountable. Because of the practical difficulties of estimation, consumer-durables are treated like single-use consumer goods and assumed to be entirely consumed in the year of acquisition itself. The annual flow of such goods to consumers, being highly irregular, cannot be taken as a proper measure of their current contribution to NP. Since investment in consumer-durables, particularly in advance countries, is significant, any computation of national income which does not take into account the services rendered to the people by this inherited wealth considerably understates the national income of the country.

D. Treatment of the Services of Government Properties

1.12 Modern governments provide a large number of free services to the citizens such as maintenance of law and order, defense, administration of justice, medical, sanitary, educational and research services, roads, bridges, parks and so on. These services, are evaluated in terms of their labour costs only because in government accounts no clear-cut distinction is generally made between capital and operating expenses involved in rendering these services. As a result contribution of government properties in these services is generally ignored. As a consequence of this practice the value of the free services furnished to the society by government is considerably understated. Similarly, the services of properties of benevolent organisations are not taken into account.

E. Unpaid Services of Housewives and other Members or the Household

1.13 Unpaid services of housewives and other members of the family such as kitchen work, washing, cleaning mending, tailoring, care and education of children, including self-services (such as shaving, hair dressing, driving one's own car, etc.), and "do-it-yourself" hobbies (such as gardening, carpentering, painting singing etc.;) are examples of unpaid services rendered within the family framework. Similarly, neighburly advice and cooperation, company of friends, and social services of all kinds rendered free outside the family framework fall in this category of

unpaid services. Such activities satisfy human wants and involve expenditure of scarce productive resources. But it is contended that they do not possess economic value. The value of such services may be spiritual, psychological, social or political. They are provided in a different framework dominated entirely by other considerations different from economic considerations.

1.14 Like other goods sold in the market, such unpaid services too (a) involve expenditure of scarce productive resources, (b) satisfy human wants and (c) have potential economic value because market analogies exist (e.g., washing of clothes by commercial launderers, paid advice by professional consultants, care of children by creches, domestic servants, cleaning of streets by public agencies, etc.) With economic progress these unpaid services are increasingly replaced by paid services of commercial establishments, public agencies, labour-saving equipment, domestic servants, etc. In advanced countries most of these services have crossed over into the category of paid services. These analogies emphasize the point that these unpaid services are as much economic production as other goods sold in the market. However, these unpaid services are excluded from the area of economic production on grounds of practical difficulties of estimation.

INTERMEDIATE VS. FINAL PRODUCTS

2.1 Products created and used up in the production of other products within the year are called intermediate products and products which emerge out of the production process and become available to the community for current consumption or for accumulation are called final goods. Cement used up in the construction of roads, bridges, etc, cotton used up in the production of thread, thread used up in weaving clothes, flour used in baking bread are unambiguous examples of intermediate products. However, it is not always possible to make a clear-cut distinction as in the examples above. Many products are of a dual character in the sense that while they are absolutely essential for the production of other goods, they also contribute to the well-being of the people. Then, in what proportions are such products to be treated as intermediate and final is a difficult question to settle. In the end, because of practical difficulties of measurement, such disputed products are placed in one category or the other on the basis of conventions or statistical convenience rather than any well-reasoned criterion. However what is regarded as a final product today may be treated as an intermediate product tomorrow. It is, therefore, necessary to understand the nature of the various products and how they are actually treated in national income accounting.

(1) Certain free-of-charge Services Provided to Consumers by Business Enterprises

2.2 Modern businesses provide a number of free-of-charge comforts and recreation facilities to customers. Decorative arrangements of modern stores, provision of radios and television sets, magazines, attractive posters, etc; in their lounges and waiting rooms and business sponsored radio and television programmes meant for education and entertainment of customers are some examples of this type. These free-of-charge services are incidental to the main business. Business enterprises treat such expenditures as intermediate expenses. But can such services be exclusively treated as intermediate products? Do they not contribute to the well-being of the people? Certainly they do and in that sense they are final in nature. **However, in NI accounting these expenses are**

treated as intermediate expenses of business enterprises. As a result NP and economic welfare are under-estimated.

(2) Certain Items of the Worker's Consumption

2.3 Certain items of the worker's consumption such as duty uniforms, transportation charges to work sites, etc, enable workers to function as suppliers of labour services and as such are in the nature of intermediate expenses. At the same time such items contribute to the well-being of the workers as well. There is no objective basis for placing them in one category or the other. **However in NI accounting such items are treated as intermediate or final depending on who bears the expenses.** If the expenses are borne by the employer (e.g., as is the case with uniforms of armed forces, nurses, police, etc) they are treated as intermediate expenses but when purchased by the workers themselves, they are treated as final. **It is arbitrary to treat the same items as intermediate when paid for by the employer and as final when paid for by the workers.**

(3) Free Services Furnished by the Government and Benevolent Organisations

2.4 The most controversial issue relates the classification of the services provided free to the community at large by modern governments and benevolent organisations. Regarding free government services some economists have contended that these only ensure the maintenance of the socio economic system and, therefore, are already incorporated in the values of the other final goods made available by the system. In other words, the existing system uses government services as intermediate products in order to produce other final goods. Therefore, they favour treating all government services as intermediate products. There is no denying the fact that there is hardly any government service, which, directly or indirectly, does not benefit business enterprises. Infrastructural services such as roads, information and conservation services, technical education, etc., could be considered primarily as services used in the process of production but at the same time these also provide satisfaction to consumers. Education, for instance, is indispensable for industrialised economies, which require skilled labour and technical personnel. But even technical education raises the level of well being of the people and, therefore, cannot be exclusively treated as an intermediate product, On the other hand, even liberal education contributes to the development of manpower for production. Again, law and order. defence, justice, etc, are essential for the smooth functioning of the economic system but does the feeling of security of one's life and liberty not contribute to his well-being? It is, thus, evident that most of the services provided free by modern governments contribute to production as well as consumer satisfaction. The present position is that the theory that government services are partly intermediate and partly final in nature is generally accepted but no reasonably satisfactory solution of the associated statistical problem has been found so far. **Because of these difficulties all services provided free by the government and benevolent organisations are treated as final products.**

(4) Intermediate Vs. Capital Expenses

2.5 In NI accounting, the period of accounting being one year, goods that are wholly used up in production during the year are treated as intermediate products and goods which are only partially used up in the year's production are treated as fixed capital goods. The expenses relating to the former category are known as intermediate or current expenses while expenses relating to the latter category are known as capital expenses or capital consumption. Theoretically, intermediate

products (which include services as well) are products which are wholly used up in a single act of production when used at all and fixed capital goods are goods which are not wholly used up in a single act of production. What is the logical basis of the choice of one year period as the basis of the distinction between current and capital expenses? One part of a machine may be used up within a year while another may last for several years. Do we have to go part by part or by whole pieces of equipments in distinguishing between current and capital expenses? Thus, the choice of one year period is arbitrary.

2.6 There is a large number of items such as painting of a building, repairs and replacement of individual parts of machines, etc which last longer than a year. In principle, expenses relating to such items should be treated as investment in fixed capital and therefore, as final product. However, with a view to minimising their tax burdens businesses normally charge such capital expenses to current account. From a statistical view-point it is not an insignificant item since repairs and maintenance of capital equipment amount to almost half the value of the newly produced capital goods. In India these expenses are treated as current expenses rather than capital expenses.

MAINTAINING PRODUCTION CAPACITY INTACT: CAPITAL CONSUMPTION

3.1 NNP, as explained above in para 1.5 of section I, is the maximum amount of goods and services produced by a nation during a year which it can put to any use (even consumption) without adversely affecting its initial productive capacity. Productive capacity refers to the capacity of the factors of production to produce goods and services. Productive capacity of the nation will be maintained if this initial stock of factors of production (i.e. wealth) is kept at the same level at the end of the year as in the beginning. Maintaining productive capacity intact, therefore, means maintaining wealth intact. In national income accounting, however, productive capacity is interpreted not in terms of the stocks of all factors of production but in the narrow sense of the stocks of material capital only. In this narrow sense, therefore, productive capacity of a country will be said to be maintained if its material capital stock is maintained intact.

3.2 All production units use some durable-use capital goods such as buildings, machines, tools and equipment of all kinds, trucks, boats, ships, etc; which aid production over a period of years. Producers buy these capital assets because they help to produce goods and services more efficiently. The purchase of a capital asset is equivalent to the purchase of a stream of productive services that will become available during a series of future years. These capital assets are not everlasting. In the course of their employment in production they gradually wear out -their productive power degenerates or depreciates and ultimately become obsolete. The extent of degeneration or depreciation of the productive power of a capital asset suffered due to its use in production during a year represents the cost of using it during the year and is called depreciation or capita consumption. Capital consumption in the economic sense is, thus, a measure of the extent of degeneration of the productive power of capital assets suffered due to their use in production during any given year.

3.3 We clarify this concept with a simple example. Suppose, a machine, expected to last 10 years

and to render equal services during these years, costs Rs. 10,000. When Used in production the productive power of this machine will degenerate by one-tenth (or by Rs. 1000) each year. Suppose, a newly established firm starts production with ten such new machines. Due to their use in production during the year the productive power of each machine degenerates by one-tenth (i.e., each machine loses one year of its useful life). In other words, each of the 10 machines has nine-tenth of its useful left at the end of the year.

3.4 This is equivalent to saying that one out of the ten machines is used up in production during the year and the firm is left with only nine machines at the end of the year. With nine machines naturally the firm will be able to produce less in the subsequent year. The firm's production capacity will be maintained if it has the same number of machines (i.e., ten) to work with during the subsequent year also.

3.5 Capital consumption is necessarily measured in monetary terms but it should be carefully noted that depreciation in the economic sense refers to the loss in physical productivity that capital assets suffer due to their use in production and the amount of replacement needed to make good this loss and not merely to losses in the money values of capital assets. Suppose, because of certain reasons the price of a machine rises to Rs. 12,000 during the subsequent year. Evidently productive capacity of the firm can be maintained only if the worn-out machine is replaced by a new one. But a new machine now costs Rs. 12,000 instead of Rs. 10,000. Therefore, capital consumption in the economic sense will amount at current prices to Rs. 12,000 as against its original cost (or book value) of Rs. 10,000. On the other hand, in the event of a fall in price, say to Rs. 8,000, the amount of capital consumption at current prices will be less than its original cost. Only when price remains constant over time will capital consumption and original cost be identical. **In conclusion, therefore, we note that capital consumption in the economic sense basically refers to the loss in the physical productivity of capital assets suffered due to their use in production during a year and is measured by the current replacement cost and not by their original cost (also known as historical cost or book value) unless the two happen to be identical.**

3.6 Providing for capital consumption (or maintenance of capital stock intact) necessitates provisions for the replacement of worn-out parts or whole equipments, services of maintenance engineers, etc. In other words, a part of the current productive effort or currently produced final goods and services has to be set aside for maintaining capital stock intact. Thus, the maximum amount of the currently produced final goods and services which people can consume or dispose of in any manner they desire without adversely affecting the country's productive capacity, is the amount net of capital consumption. Capital stock is an embodiment of the country's productive efforts in the past. Therefore, the part of the capital stock used up in current production represents a claim of past production over current production.

Measurement of Capital Consumption

3.7 Measurement of capital consumption raises the most difficult conceptual and statistical problems. Strictly speaking, depreciation means the annual allowances for the consumption of fixed capital assets through wear and tear in production and predictable obsolescence. However

measurement of the values of capital assets and their comparisons at two points of time raise very difficult conceptual and statistical problems.

3.8 Business enterprises measure success in terms of rates of money returns over money outlays on investment and in terms of the time taken in recovering the financial capital invested. The idea behind the capital consumption allowances made by private business is to maintain the money values of their capital equipment intact. For the economy as a whole, on the other hand, the idea of capital consumption is based on the concept of maintaining the total physical productivity of its capital stock intact. In a dynamic economy these two concepts of depreciation -in terms of money value and in terms of physical productivity -continually diverge. "The problem of what is meant by "keeping capital intact" is a most controversial one in economic theory, basically because in a dynamic economy, with changes in prices, tastes and technology the nature of capital itself changes and the simple notion of replacing worn-out capital must inevitably become much more complex (Ruggies and Ruggles, page 114.) Given the present state of theoretical and statistical knowledge it is not possible to work out a truely satisfactory measure of capital consumption in the economic sense.

Depreciation Allowance in Practice

3.9 Businessmen give a certain **economic life** to capital assets which depends partly on their **physical lives** (i.e., the number of years they are expected to last) and partly on **expected obsolescence** (Obsolescence means the decline in the profitability of capital assets due to reasons other than decline in their physical productivity. For example, a machine may be in a perfect working condition but due' to a change in the pattern of demand the commodity produced with this machine may become unsaleable in the market. As a result the use of the machine will be unprofitable for the producer whose primary interest lies in profits rather than physical productivity. Consequently the machine will have to be scraped. Thus, scraping of capital assets before the expiry of their economic lives for reasons unrelated with decline in their physical productivity is known as obsolescence). So far as obsolescence is expected, it is taken into account in determining the economic life of capital assets. Businessmen calculate annual capital consumption allowances at a uniform rate by distributing equally the total original (or historical) costs of capital assets over their economic lives because they are primarily interested in maintaining their money value intact rather than their physical productivity. The economic life and the methods of spreading total costs over the years are further influenced by **rules and guidelines** laid down by the government for tax purposes which are primarily aimed at influencing, the pattern and growth of investment rather than for measuring correct depreciation.

3.10 In the first place, from the standpoint of the economy as a whole there is no reason to believe that **capital stock does depreciate at the rate businessmen expect** it to depreciate. Economic life of a capital asset depends not only on its physical life and expected obsolescence but also on the **actual rate of utilization. Depreciating capital assets at a uniform rate implicitly assumes capital consumption to be independent of their actual rates of utilization.** Capital consumption allowances based on the straight-line method seldom provide for year to year variations in capital consumption due to variations in rates of utilization of capital assets. **Instead of treating** capital consumption as a fixe percentage of money invested, it would be more appropriate to tr

it as a fixed percentage of the value of gross output of the year. This method was used in India for some rental incomes, mining and forestry.

3.11 Secondly, business capital consumption allowances are based on historical costs of capital assets which may be quite different from their current replacement costs; thus giving a distorted figure of actual capital consumption during the year .For example, the current replacement cost of a machine is Rs. 10,000 while its historical cost is only Rs. 5,000, depreciation allowances based on historical cost will understate the actual capital consumption (in the example, provision of Rs. 5000 will provide only for half the actual capital consumption) and will overstate the net product. Therefore, in periods of rising prices, depreciation allowances based on historical costs understate actual capital consumption and overstate net product. In periods of falling prices the opposite happens: capital consumption and overstated net product tends to be understated. Current replacement cost and historical cost can be the same only under the assumptions of unchanging prices of inputs and unchanging technology, assumptions which are unrealistic for a dynamic economy. **Moreover, since all costs and prices entering calculations in NI accounting are current, it would be conceptually wrong to use capital consumption figures based on historical costs.** Consistency, therefore, requires that capital consumption figures based on historical costs are shifted to current replacement cost basis by correcting them for the price changes. Most countries at present do this through the so-called **'depreciation revaluation adjustment'.**

3.12 The **third** important point is regarding the distinction between **capital consumption and capital losses.** Capital consumption is an offset for the value of capital assets used up in production. Losses in the value of capital assets due to unpredictable reasons not related with their use in current production are capital losses. While capital consumption is a charge on current production, capital losses have nothing to do with it and are to be adjusted against capital stock (i.e., wealth). For example, due to a change in the pattern of demand the product produced with a certain machine may become unsaleable in the market. This may render the machine unprofitable for the producer even though nothing has happened to its physical productivity. Use of the machine being unprofitable, the business will scrap it and enter the whole uncovered balance of its cost as capital consumption Similarly, damages to capital assets due to other unpredictable reasons such as earthquakes, floods, windstorms, arson, wars, etc; are capital looses. Such losses have nothing to do with the use of capital assets in current production and are rightly excluded from capital consumption.

3.13 However, obsolescence of capital assets due to technological changes is given a special treatment. With technological progress more and more efficient machines, equipment, devices, processes etc; are introduced which have progressively lower costs of production. Lower costs of production mean lower commodity prices. A fall in commodity price due to the introduction of a more efficient equipment destroys the earning power of the older less efficient equipment which has relatively higher costs of production. When price falls so low as to leave no profit margin for the older equipment, it has to be scraped earlier than the expiry of its useful life. **The equipment is scraped not because of any reduction in its physical productivity but because of the low commodity prices its use has become unprofitable.** This is called technological obsolescence

Business firms treat the entire balance of the purchase price of the discarded equipment as capital consumption because their objective is to maintain intact the money value of their capital equipment rather than their physical productivity. In the economic sense, on the other hand, the idea of capital consumption is based on the concept of maintaining physical productivity of capital assets intact. Technological progress does cause a financial loss to individual producers by rendering their capital assets unprofitable but it does nothing to affect their physical productivity in any way. The fact that more up-to-date and efficient capital equipment does the same job more efficiently than the older equipment, does not mean that the amount of replacement needed to maintain the existing level of production (and hence production capacity) has increased. On the contrary, technological progress, by promoting efficiency, has the effect of reducing, and not increasing, the amount of replacement needed to maintain total productive capacity intact. Maintenance of output level (and hence productive capacity) becomes easier and as a result less replacement investment is needed to keep productive capacity intact. Suppose, everything else remaining the same, due to some technological improvement one new machine produces twice as much as one old machine does. Evidently, only one new machine will be needed to replace two worn-out machines of the old type. From the society's point of view, therefore, technological obsolescence should not be treated as capital consumption. It represents a capital loss and should be adjusted against wealth. However, in capitalist economies because of the predominance of the capitalist's point of view technological obsolescence is treated as capital consumption. **The present position is that while technological obsolescence is included in capital consumption, obsolescence of capital due to other reasons such as changes in the pattern of demand, damages to capital assets due to other unpredictable reasons such as wars, arson, floods, earthquakes, windstorms, tornadoes, etc; are treated as capital losses and excluded from capital consumption.**

3.14 Fifthly, in many countries no allowance is made for capital consumption on government properties. The fixed assets of government are included in the general government budget as a part of current government expenditure on goods and services. Therefore, fixed assets of government are assumed to be consumed when acquired by the government. **In India, for example, fixed assets of government enterprises are depreciated over the years. But fixed assets of the general government (i.e. whose services are furnished free to the society at large) are not depreciated and as a result the gross and net products of the general government are the same.** From a statistical point of view the exclusion of depreciation of the fixed assets of the general government is not an insignificant one. This practice leads to a considerable overstatement of net product of the government.

3.15 Lastly, it may also be pointed out that with a view to minimising their tax burden businessmen very often treat as current expenditure items which actually represent capital expenditures. This practice understates gross fixed investment as well as capital consumption. For example, in Indian national income estimates by CSO repairs and maintenances of fixed capital assets are treated as intermediate expenditure rather than capital consumption.

PRODUCT AGGREGATES

(Rupess in Crores)

		AT MARKET PRICES				AT FACTOR COST			
		GROSS		NET		GROSS		NET	
		National	Domestic	National	Domestic	National	Domestic	National	Domestic
Capital Consumption		15399	15399			15399	15399		
Net Fixed Capital Formation		30429	30429	30429	30429	30429	30429	30429	30429
Change In Stocks		8016	8016	8016	8016	8016	8016	8016	8016
Net Investmetn Abroad	Net Factor Income	(-) 1471		(-) 1471		(-) 1471		(-) 1471	
	Net Exports	(-) 3573	(-) 3573	(-) 3573	(-) 3573	(-) 3573	(-) 3573	(-) 3573	(-) 3573
Private Consumption		145327	145327	145327	145327	145327	145327	145327	145327
Government Consumption		24062	24062	24062	24062	24062	24062	24062	24062
Statistical Discrepancy		(-) 5275	(-) 5275	(-) 5275	(-) 5275	(-) 5275	(-) 5275	(-) 5275	(-) 5275
Total		212914	214385	197515	198986	212914	214385	197515	198986
Minus Net Indirect Taxes						23497	23497	23497	23497
		GNP	GDP	NNP	NDP	189417	190888	174018	175489
						GNP	GDP	NNP	NDP

INCOME AGGREGATES

		AT MARKET PRICES				AT FACTOR COST			
		GROSS		NET		GROSS		NET	
		National	Domestic	National	Domestic	National	Domestic	National	Domestic
Capital Consumption		15399	15399			15399	15399		
Indirect Taxes (net)		23497	23497	23497	23497				
Employee Compensation	From Abroad (net)	(-) 101		(-) 101		(-) 101		(-) 101	
	From Domestic Production	74002	74002	74002	74002	74002	74002	74002	74002
Operating Surplus	From Abroad (net)	(-) 1370		(-) 1370		(-) 1370		(-) 1370	
	From Domestic Production	31863	31863	31863	31863	31863	31863	31863	31863
Mixed Incomes		69624	69624	69624	69624	69624	69624	69624	69624
Total		212914	214385	197515	198986	189417	190888	174018	175489
		GNI	GDI	NNI	NDI	GNI	GDI	NNI	NDI

NOTES

[Above figures relate to India's NI 1984-85]

1. Net indirect taxes (Rs. 23497 crores) accounts for the difference between any product (or income) aggregate at market prices and the corresponding aggregate at factor cost.

2. Net factor income from abroad (-1471 crores) accounts for the difference between any national product (or income) aggregate and the corresponding domestic aggregate.

3. Capital consumption (Rs. 15399 crores) accounts for the difference between any gross product (or income) aggregate and the corresponding net aggregate.

Self-Check Exercise

Compute all the product and income aggregates shown in the chart on page 54 and also personal and disposable incomes from the four sets of data given below which relate to India's national incomes for the years 1980-81 to 1983-84. The figures are in crores of rupees.

	COMPONENTS	1980-81	1981-82	1982-83	1983-84
1.	Indirect taxes (net of subsidies)	13905	16914	19175	21357
2.	Undistributed profits of the private corporate sector (net of retained earnings of foreign enterprises)	1188	1034	1039	961
3.	Capital consumption	8103	9797	11473	13448
4.	Corporate profits tax	1377	1970	2184	2493
5.	Net fixed capital formation	17106	19986	23446	27113
6.	Change in stocks	6248	6446	5557	6694
7.	Property and entrepreneurial income accruing to the government	2135	2409	3352	3231
8.	Net factor income from abroad (ROW)	+ 298	(-) 7	(-) 681	(-) 991
9.	Exports minus imports	(-) 4574	(-) 4560	(-) 4138	(-) 4374
10.	Savings of non-departmental enterprises	116	1046	1560	1476
11.	National debt interest	1490	1873	2675	3696
12.	Private consumption	89775	102404	112730	134609
13.	Government consumption	13033	15276	18016	20788
14.	Statistical discrepancy	(-) 2238	(-) 1665	(-) 1948	(-) 4217
15.	Other current transfers from the government	2835	3370	4009	4640
16.	Labour income from abroad (net)	(-)29	(-) 18	(-) 62	(-) 63
17.	Labour income from domestic production	43029	49093	56248	64893
18.	Operating surplus from abroad (net)	327	11	(-) 619	(-) 928
19.	Operating surplus from domestic production	17336	21558	25083	27668
20.	Other current transfers from abroad	2257	2221	2527	2774
21.	Mixed income of self-employed	45080	50022	53157	66695
22.	Direct taxes paid by the households	2500	2881	3129	3367

ANSWERS

Name of the Product/ Income Aggregate	1980.81	1981.82	1982.83	1983-84
1. Gross National Product at Market Prices	127751	147677	164455	193070
2. Gross Domestic Product at Market Prices	127453	147684	165136	194061
3. Net National Product at Markes prices	119648	137880	152982	179622
4. Net Domestic Product at Market Prices	119350	137887	153663	180613
5. Gross National Product at Factor Cost	113846	130763	145280	171713
6. Gross Domestic Product at Factor Cost	113548	130770	145961	172704
7. Net National Product at Factor Cost	105743	120966	133807	158265
8. Net Domestic Product at Factor Cost	105445	120973	134488	159256
9. Gross National Income at Market Prices	127751	147677	164455	19307
10. Gross Domestic Income at Market Prices	127453	147684	165136	194061
11. Net National Income at Market Prices	119648	137880	152982	179622
12. Net Domestic Income at Market Prices	119350	137887	153663	180613
13. Gross National Income at Factor Cost	113846	130763	145280	171713
14. Gross Domestic Income at Factor Cost	113548	130770	145961	172704
15. Net National Income at Factor Cost	105743	120966	133807	158265
16. Net Domestic Income at Factor Cost	105445	120973	134488	159256
17. Personal Income	107509	121971	134883	161214
18. Disposable Personal Income	105009	119090	131754	157847