
UNIT 19 ALLOCATION OF RESOURCES AND GROWTH STRATEGIES IN DEVELOPING COUNTRIES

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19.0 OBJECTIVES

After reading this unit you should be able to:

- explain the meaning and importance of investment criterion as an instrument of resource allocation in a developing economy;
- identify the different criteria and their respective limitations;
- Appreciate the importance of the problem of choice of techniques and how it has been sought to be solves.

19.1 INTRODUCTION

The traditional theory of economic growth has been developed within the framework of a laissez taire economy. In this type of economy, free operating market a are beloved to achieve. The most efficient use of resources. In the context of an advanced economy, there may be some justification for such a belief. But in the context it developing economies such belief has only harmed their growth prospected. Developing economies need to formulate both short-term and long terms development strategies. For example, a country may opt for a capital accumulation

and industrialization strategy. Another country may choose to develop through trade and exchange, etc. A well-formulated development strategy determines the allocation of investible resources among various competing uses. Allocation of resources needs to be guided by one or more of several investment criteria developed for the purpose. Technology of production is as such a part of development as investment. In fact, investment becomes alive only when it gets embodied in terms which involve use of labour and capital in certain proportions. Since in many cases there are possibilities of using one combination of capital-labour rather than the other or others, a choice has to be made between different techniques.

19.2 GROWTH STRATEGY

The primary problem to be identified in planning for development in a developing economy is to establish a system of ends that may be persuaded with a definite technique. This type of exercise is known as the strategy of planning. Any strategy for development consists of three components. (i) resource mobilization, (ii) pretexts for the allocation of resources mobilized, and (iii) a policy framework to ensure an efficient development of resources into the priority sector. Two important strategies of growth can be identified as (i) The strategy of balanced growth, and (iii) The strategy of unbalanced growth.

19.2.1 The Strategy of Balanced Growth

You have already studied in detail about the determination of balanced growth and unbalanced growth in Block-4, Unit-13. We are only repeating the salient features of these two doctrines to maintain the continuity of discussion in the present unit.

Balanced growth implies that the different sectors of the economy should grow in a harmonious manner, that no sector should go far ahead of others or remain too far behind. In other words, different sectors of the economy should grow in such a manner that the output in different sectors should have a market and there occurs neither a shortage nor a surplus in any sector. Balanced growth has both horizontal as well as vertical aspects.

19.2.2 The Strategy of Unbalanced Growth

This strategy advocates that investment should be made in selected sectors rather than simultaneously in all sectors of the economy. Economics according to investment made in selected sectors can be utilized for the development of other sectors. Thus, the economy gradually moves from the path of unbalanced growth to that of balanced growth.

However, there is not much to choose between the two strategies. In balanced growth the development of one sector is dependent on the development of other sectors. On the other hand, under unbalanced growth the economy gradually moves on the path of economic development via disproportion and disequilibrium and ultimately reaches balanced growth. Thus, both the strategies involve interdependence among different sectors of the economy.

19.3 INVESTMENT CRITERIA IN DEVELOPING COUNTRIES

The traditional economics held that the free and unrestrained working of the price mechanism would lead to an ideal allocation of resources and consequently to the maximization of national income. This argument was based on the assumption of perfect competition. Perfect competition, however, does not exist in the real world.

In a world of imperfect competition, the uncoordinated decisions of the individuals may lead to non-optimum allocation of resources.

The prevailing prices of inputs and produces do not reflect the value of these factors to society. Foreign exchange rates, wage rates, interest rates, rents and product prices are affected by a number of factors, other than the market chatter of demand and supply. The resultant mis-allocation of resources may only slow down the rate of growth in a developing economy.

In this type of economic setting, it may be necessary to direct the allocation of resources, rather than to leave it to the market mechanism. Once it is accepted that allocation of resources is to be decided by the state. There arises the question as to what would be the criteria for determining the allocation.

Economists have been analyzing this problem; a number of investment criteria have been evolved. We discuss below a few of these criteria.

19.3.1 Social Marginal Productivity (SMP) Criterion

This criterion was first put forward by A.E. Kahn in the **Quarterly Journal of Economics (February, 1951)**. It was subsequently modified by Hollis B. Chenery in the Quarterly Journal of Economics (February 1963). The criterion is based on the conventional marginal productivity approach (which you studied in your course on microeconomics. If you are feeling rusty about your knowledge of marginal principles, look up the analysis of consumption, production and costs in the microeconomics course.)

The criterion stated that the allocation of resources will be optimum when the SMP of such resource, say capital, is the same in all its uses. As more and more capital is employed in any perfect combination with given amounts of other inputs, its marginal product will after a time start falling. The capital should be allocated among different projects in such a way that its SMP in all the projects becomes the same.

The SMP of investment in given productive use is the average annual increment in national income, including the balance of payments effects, taken in social context. It implies that the increment in national income is expressed as social value measured in terms of shadow or accounting prices of the products produced by the projects. Similarly, the factors of production and other inputs used in the project are also valued at their shadow prices based on their respective social opportunity costs. Shadow prices are used to compute. The SMP because market prices of inputs used and products produced fail to fully reflect the true value of annual net contribution of the investment project to national product.

The SMP can be calculated by applying the following formula:

$$SMP = \frac{x + E - Mi}{k} - \frac{L + Md + o}{k} + \frac{r(aB_1 + B_2)}{k} \dots\dots(1)$$

$$= \frac{v}{k} - \frac{c}{k} + \frac{Br}{k} \dots\dots(2)$$

$$SMP = \frac{v - c}{k} + \frac{Br}{k} \dots\dots(3)$$

Where

- K = increment to capital (investment in a prospect)
- X = increased value of output
- E = added value of output due to external economics
- M_i = cost of imported materials
- V = annual social value added domestically i.e., X+E – M_i
- L = Labour cost
- M_d = Cost of domestic materials
- O = overhead costs (including replacement of capital)
- C = total social cost of domestic factors , i.e., L + M_d =0
- B₁ = effect of installation of investment project on balance of payments
- B₂ = effect of operation of project on balance of payments
- A = combined amortiation and interest rate on foreign borrowing
- B = total balance of payments effects, i.e, aB₁+B₂
- R = average over valuation of national currency at existing rate of exchange (or premium attached to foreign exchange earning or saving.

Here all variables except K and r are annual flows.

In developing economics, foreign exchange is more valuable than domestic currency. There is generally a large difference between the actual and official value of foreign exchange. The ratio of this difference to the official value can be represented as 'r'.

- A zero $\underline{r}$ means equilibrium in balance of payments as well as in the actual and official value of foreign exchange.
- A positive $\underline{r}$ represents undervaluation of foreign exchange and a deficit in balance of payments.
- A negative $\underline{r}$ means an overvaluation of foreign exchange and a surplus in balance of payments.

Thus, when investment is planned in developing economics, the projects being considered for inclusion in a plan would be ranked in the descending order of their SMPs, and the projects with higher SMP would be included in a development plan depending upon their accommodation within the investment budget.

Substitution between different projects would continue till the following equality is reached:

$$SMP_A = SMP_B = \dots\dots\dots = SMP_N$$

Where A, B,.....N are different prospects

Limitations of the SMP Criterion

The SMP criterion suffered from a number of limitations as follows:

First, the SMP Criterion emphasizes the maximization of aggregate output from current investment of aggregate output from current investment effort. It does not seem to take into consideration. The effect of allocation of resources on the rate of growth of the agents of production. To be more precise, the SMP criterion does not take into consideration :

- The indirect effect of allocation on the expansion of entrepreneurship. On the improvement in quality of labour force and on the expansion of skill;
- The effect of the investment allocation on future, saving habits which constitute an important factor in determining the future rate of investment;

- The effect of investment allocation on future consumption pattern which is an important factor determining as to whether. The consumption is simply on population maintenance, or on the expansion of growth agents;
- The indirect effect of the investment allocation on the rate of population growth which is an important factor determining the per capita output.

Secondly_ For achieving an equilibrium in the balance of payments, deviations might be essential from the allocation of resources determined on the basis of the SMP criterion.

Three, The SMP criterion assumes that the production is subject to the law of diminishing returns. Actually, certain industries might be subject to the law of increasing return up to certain scale of production.

Four, The SMP criterion neglects the effect of resource allocation on the distribution of income. Distribution of income is important not only an social considerations but also because it considerably affects development in a number of ways. It, for instance, affects the volume of savings and there by the rate of investment

Five, The SMP criterion assumes that production techniques remain constants. This may be true in case of minor changes in investment. When changes in investment are large, it may be profitable to shift to certain different techniques. With the change in techniques, marginal productivity of vector no larger remains a continuous function of inputs

19.3.2 Capital Turnover ((or Capital-Output Ratio) Criterion.

The capital turnover criterion has been developed by J.J. Polak “**Balance of payments problems of countries, Reconstruction with the Aid of Foreign Loans, Quarterly Journal of February 1943 Economics** and N.D. Buchanan (**International Investment and Domestic Welfare, New York, 1941**)

Capital turnover is the increase in output resulting from a units investment in a project. In other words, it is the ratio or increase in national output to investment made in a project. Therefore, capital turnover = $\Delta Y/I$, where

I = investment or increase in capital stock

Thus, capital turnover is just the reciprocal of incremental capital-output ratio, i.e, $ICOR = I / \Delta Y$. Hence, this criterion is also known as the capital –output ratio criterion.

The large involved in the capital turnover criterion is an follows : capital is acquire in developing countries. Therefore, that technique should be chosen which yields the maximum output per unit of capital employed. In other words, for maximizing output, investment projects with a high rate of capital turnover (i.e, of a low capital-output ratio) should be chosen. Quick-yielding projects with a low capital intensity make it possible for scare capital resources to be realised soon enough for reinvestment into other projects such projects also provide maximum employment per resource in developing countries.

Other important advantages of this criterion are as follows :

- By borrowing capital-light and Quick-yielding projects, it will increase the production of consumer goods in the short period, thereby checking the inflation any rise in their prices
- Projects with high turnover rate being often import-light, they would not put pressure on the scare foreign exchange reserves of the developing countries.
- As this criterion advocates projects with low capital intensity and high labour intensity, it ensures equitable distribution or income and wealth in the economy.

Limitations of the Capital Turnover Criterion

The Criterion outturns from a number of limitations; among these, the more important are as follows :

- It ignores the element of time Quick-yielding projects having a low capital-output ratio in the short-run may have a high ratio in the long-run.
- It ignores the supplementary benefits flowing from an investment project. It is possible that projects with a high capital-output ratio may confer certain supplementary benefits on the economy thereby outweighing extra costs involved in them.
- In certain industries like agriculture, a low capital-output ratio may appear only outwardly. If working capital like fertiliser is also included in the fixed capital investment, the ratio in fact may be high.
- The higher the rate of turnover, the higher may be the rate of depreciation of capital and the rate of output may not be high.
- The maximization of employment argument implied in this criterion may hold good only in the short run. A capital-intensive project may absorb little labour to start with, but may maximize the amount of labour per unit of investment in the long run.
- It does not necessarily flow that with increased employment there will be an addition to total output. Labour-intensive or capital-saving investments may keep productivity of labour low as usual, without making any addition to total output.
- The use of labour-intensive techniques may even reduce output thus necessitating a greater use of capital thereby raising the capital-output rates.
- Such techniques often produce sub-standard products. Such products are often subsidised by the government and involve high social costs.
- This criterion takes a narrow and limited view of **output** which means output resulting directly from a given investment. This view of output would be justified only where private and social benefits are identical. However, in most investments, since private and social benefits diverge, the minimum ICCR criterion fails to take into account the latter type of benefits (viz. Social product). Besides, in the case of several types of social investments, such as road building, education and public health, to talk of 'output' is meaningless since in such cases no soluble product is produced.

Regarding the application of this criterion for choosing between different techniques, the techniques chosen according to this criterion will be efficient only if the additional cost of labour is zero because under such conditions the rate of return over capital cost will be maximized. If the additional labour cost is positive, such techniques may not be the most efficient ones. In such cases, the additional cost of labour will have to be taken into account.

19.3.3 Marginal Per Capital Reinvestment Quotient (MRQ) Criterion

This criterion has been suggested by W. Galenson and Harvey Leilenstein (**Investment Criteria, Productivity and Economic Development**. Quarterly Journal of Economics, August 1955)

This criterion states that the main aim of economic development in developing countries is to maximize output (or per capita output) and consumption at some future date rather than maximisation of current national output. This can be achieved by maximizing the rate of saving and reinvestment in the economy.

Per capita MRQ is defined as the ratio of productivity per worker minus consumption per worker to capital per worker.

MRQ is determined by the following basic factors:

- Gross productivity per worker
- “wage” goods consumed per worker
- replacement and repair of capital
- increments in output as a result of non-capital using innovations, such as improvements in skills, health, energy, discipline of the labour force, etc.
- Decline in morality
- Direction of investment

The first six factors determine the per capita investment available period after period and the seventh factor concerns its allocation.

According to this criterion, the allocation of resources will be optimum when the MRQ of capital is equalized in its various alternative uses.

For increasing the MRQ, this criterion advantages a pattern of investment which influences the distribution of income in favor of profit earner rather than wage earners. It is assumed that profits are largely saved and reinvested while wages are largely spent on consumption.

To increase the proportion of profits in the additional income generated, there is need to maximize productivity per worker. The productivity of labour is a function of capital per worker, i.e., capital-output ratio. The higher the capital-labour ratio, the higher the labour productivity. In other words, an investment allocation pattern with higher capital intensity will ensure a higher productivity of labour, higher profits and hence a higher rate of reinvestible surplus. The rate of reinvestment can be found as follows :

$$r = \frac{p - e.w}{c} \quad \dots\dots(1)$$

Where,

R= rate of reinvestment (or MRQ)

P= net output per machine

E= number of workers employed per machine

W = real wage rate

E = cost per machine

From equation (1) per capita MRQ can be derived by dividing both the numerator and the denominator by the number of workers per machine (e). That is .

$$\begin{aligned} \text{per capita MRQ} &= \frac{p/e - ew/e}{c/e} \quad \dots\dots(2) \\ &= \frac{pe - w}{a} \end{aligned}$$

Where,

P/e = pc = productivity per worker

C/e = a = capital – labour rate or capital intensity per worker.

Galenson and Leinenstein held that the maximum rate of reinvestment would be attained by the maximisation of capital labour ratio wage rate is a critical variable and the amount of employment provided in any future year by a unit of investment considerably depends upon the wage deduction from the product of industry. The higher the no real wage rate, the larger in the potential employment that can be obtained by the use of capital-intensive machinery. The anthers concluded that the criterion of MRQ and the corollary of a high capital-labour ratio are the appropriate guides in formulating the programme for economic developments.

Limitations of the Criterion

The criterion is subject to a few limitations as follows :

One, The MRQ is based on the assumption that consumption remains constant overtime. But is this is difficult to remain so. With additional employment the total consumption of the community is likely to increase and unless the increase in output as a result of additional employment is greater than the increase in consumption resulting from it, the volume of invisible surplus will fall. This will adversely aspect the growth rate of the economy.

Two The criterion goes against the principal of marginal productivity of capital. Is the amount of capital is increased its productivity begins to decline. It implies a fall in output per capita and in MRQ.

Three, The criterion is lopsided, for it does not study the effect of balance of payments on investment. In a developing economy there is an acute scarcity of capital goods these have to be imported. This worsens the balance of payments position.

Four, It has been pointed out that instead of depending on the reinvestment criterion for planned investment, it may be better to use fiscal measured to attain an income distribution which will yield sufficient savings for the purpose of reinvestment.

Five, The reinvestment criteria neglects the importance of consumption. It advocated cut in consumption. But current consumption may be more important than the future consumption and the reinvestible surplus may have to be cut down in the interest of the community.

Lastly, The choice of highly capital-investment mery not be optimal policy even for the generation of savings because in a labour surplus economy rising unemployment would surely consume but not produce anything. Thus, the result would be dissolving and reduction of aggregate savings.

Notwithstanding the above limitations, the MRQ criterion is the first approximation towards accelerating the rate of income growth in developing countries. It is more realistic than the SMP criterion as it takes into account the effects of population growth on the future rate of investment.

Check Your Progress 1

1) What do you mean by investment criterion ? Why are these required ?

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- 2) Critically examine the social marginal productivity criterion.

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- 3) Explain in brief the capital turnover criterion what are its limitations.

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- 4) Make your own evaluation of the marginal per capita reinvestment quotient criterion.

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19.3.3 The Time Serious Criterion

The time series criterion has been developed by Maurice Dobb (**An Essay on Economic Growth and Planning, 1960**) and A.K. Sen (**“Some Notes on the chocie of Capital Intensity in Development Planning”**,_ Quarterly Journal of Economics, November 1967). This criterion recognizes that the people of a country cannot wait indefinitely to enjoy the benefits of present investment effort in terms of increases in output, consumption and employment. Therefore, a finite time horizon of investment planning must be adopted. This time horizon depends on the value judgment of the planner which takes into account the capacity of the community to wait to reap the reward of their present investment. But, once the time horizn has been chosen, the choice of investment project will depend upon a comparison of total returns to the society (measured in terms of total output) from different projects, over a finite time horizon and the selection of that project which gives the highest sum total of returns over the period of time chosen by the planner.

This can be explained with the help of an example.

Suppose there are two investment projects, H and L having same cost. Project his capital intensive while project L is labour-intensive. In project H, the stream of output is less than that in Project L for the first few years (up to D) after which the stream of output of project H exceeds that of project L. Period of recovery (T) is

defined as that time period in which the total output (i.e., the sum of annual output flows of the capital-intensive project H is just equal to that of the labour project L.

In Fig.19.1 Curves H and L show the time series flow of consumer goods output from the respective projects. OT represents the period of recovery or recommend as the surplus-output area for project H (Bcc') is exactly equal to its deficit –output are (BAA')

Let the time horizon chosen by the planner be u . Now the choice of project becomes easier.

- 1) When $U > T$, capital intensive project H will be selected.
- 2) When $U < T$, labour-intensive project L will be selected.
- 3) When $U = T$, either of the projects will be selected.
- 4) When $U = 1$, we get capital turnover criterion; being interested in maximisation of current output, project L will be preferred
- 5) When $U < 1$, we get MRQ criterion; being interested in maximisation of output at some future point of time, project H will be preferred.

This criterion can also be applied to the cost side of the projects. A capital-intensive project, which obviously involves large initial capital outlay, has lower operating cost than a labour-intensive project 50 over the recovery period, higher capital cost in the initial period may be recovered through a saving in operating cost in the latter part of the recovery period may be recovered through a saving in operating cost in the latter part of the recovery period. If the excess of initial capital outlay of a capital-intensive project is less than the saving in its operating cost as reflected in time taken to redeem investment, a capital intensive project will be preferred to a labour-intensive project and conversely, if the position is otherwise.

Limitations of the Criterion

The Criterion, however, suffers from certain limitations, as follows:

One The assumption of a particular time-horizon is arbitrary.

Two, it is not possible to derive the time series for all time to come. Therefore, the planning period has to be definitely fixed. But this creates some serious problems. When the time limit is about to end, labour-intensive technique might be selected in order to inflate the quality of output and these capital formation is neglected. As a result, investment will freely after the time limit and it might not be possible to compensate for the depreciation of machinery.

Three, factors like technological change, wage rate, propensity to consume, etc. On which the study of the serious depends may all be changing and make the forecasting of future investment and output not only difficult but also wrong.

Four, If the period of recovery is very short, this criterion in protective becomes the net rate of turnover criterion, and if the period of recovery is very long, it corresponds to the reinvestment criterion. In the end we are left with the question, what criterion is there for the choice of a time period?

19.3.4 Leading Sectors Criterion

This Criterion has been formulated by W. W. Rustow (The stages of Economics Growth, 1960.)

Rostow divides the various sectors of an economy into the following three categories

- Primary growth sectors, where possibilities for innovation or for the exploitation of newly profitable or hitherto unemployed resources yield a high growth-rate and set in motion expansionary forces elsewhere in the economy.

- Supplementary growth sector, where rapid advance occurs in direct response to advance in primary growth sectors.
- Derived growth sectors, where advance occurs in some fairly steady relation to the growth of total real income, population, industrial production or some other overall, modestly increasing variable.

Overall growth is based on the direct and indirect consequences of rapid growth in certain key sectors during some period. The basic conditions for qualifying an key sectors are that there must be enlarges effective demand for their products; they should have production functions of high productivity, thus leading to rise in output per head; they should generate maximum of reinvestible surplus which can be ploughed back into productive investments; they should set up of chain of effective demand for other products and generate external economics which will turn industrilisation into an automatic and cumulative process. It investment is concentrated in a limited number of such leading sectors which generate growth in multiple ways it can be a powerful engine of transformation and progress.

Limitation of the Criterion

The criterion suttees from the following limitations:

One, it is difficult to identify the key sectors in a developing economy. There is no automatic equivalence between the concept of profitability as determined by the cost-price relationships in the free market and the concept of maximum real rate of return in terms of fell consequences of an act of investment for the rate of growth.

Two, it is not possible to measure the full consequences of an investment because several elements (e.g., external economics, impact on skills and attitudes, etc.) involved in it are not amenable to measurement.

19.4 APPLICATION OF INVESTMENT CRITERIA

We have reviewed a number of investment criteria as propounded by different economists. A drawback common to all these criteria is that non-economic considerations influencing economic development have hardly received the attention. For instance, investment planning would surely affect' motivated and value system of the people, which would in turn influence their economic performance. A satisfactory investment criterion should aim at balancing economic and non economic effects of investment. One of the non-economic criterion should be not to disturb the emotional stability of the people much (by avoiding to transplant persons into an alien environment and social circumstances). Investment criteria should, on the one hand, avoid violating existing social institutions too much, and on the other, put a premium on positive emotions and drives which promote development.

Check Your Progress 2

- 1) Critically examine the time series criterion

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2) What is leading sectors criterion? What are its limitations?

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3) Identify the drawback common to different investment criteria.

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19.5 CHOICE OF TECHNIQUES

The foregoing detailed discussion on investment criteria provides us with a framework within which the problem of choice of techniques can be discussed.

19.5.1 Meaning

The choice of techniques refers to the type of factor contained (i.e, between labour and capital in particular) for any project or enterprise. A combination chosen for a project gives it a technique of production. The basic question is : what should be the techniques of production that are prescribed for adoption in projects to be included in a plan. Broadly speaking, the ultimate choice is between labour-intensive and capital intensive techniques of production. The principal consideration is that the choice is exercised in such a way that the objective function laid down in the plan is maximised. In other words, the problem is that it optimal choice of technique.

19.5.2 Determinants

The choice of techniques is determined by a number of factors as follows :

- The chosen technique should not involve an unduly long gestation period.
- The technique should not conflict with any of the underlying objectives of the plan.
- The technique should help in creating wide-ranging external economies so that the aggregate output is much greater than the sum total of the output of individual projects.

19.6 APPROACH TO THE CHOICE OF TECHNIQUES.

The problem of choice of techniques has been approached in different ways by different economists. We will here focus on the following three approaches:

- 1) The Maditimas Approach
- 2) Macrice Dobb's Approach
- 3) A.K. Sen's Approach

19.6.1 The Traditional Approach

The traditional microeconomics Theory approach to the choice of techniques stipulates. That any entrepreneurs seeking to maximize his profits would choose that method of production that minimizes the cost of production. Assuming that labour is abundant and therefore relatively cheaper, labour-intensive techniques would maximise profits as well as output. In other words, according to the traditional approach, the production function, together with the relative, prices of factors, determines the choice of techniques.

A further modification of the traditional approach is that output should be evaluated at shadow prices. It should be suitably adjusted for other consequences of investment, such as external economy effects and complementary, so that an estimate of social return on investment could be made thus those investments may be made where social return on capital is the maximum.

Limitations

The traditional approach sutured from the following shortcomings

One, it adopts a static framework to deal with a dynamic problem of economic growth.

Two, The emphasis in this approach is on efficiency in the use of resources rather on optimum growth path over a period of time.

Three, The choice of techniques is not though of as means of accelerating the rate of growth of the economy. The future requirements of development do not receive attention. Hence, this approach is unsuitable in the context of long-term planning.

19.6.2 Maurice Dobb's Approach

Maurice Dobb believed that the choice of techniques sould be dictated by its effect on the rate of growth. He is in labour of Gaslenson Leibenstein MRQ criterion of investment planning (discussed in detail in section 19.3 above). Dobb beleived that the 'real' constraints in

The Problem of choice of techniques relates to the advanced sector, A. s\Sector A is just about being started. Initially, the government's investment capacity is limited by the surplus it output over consumption that can be generated in sector B. If this surplus exists, the government can mobilize it for investment through location, etc. The question is how to invest it.

Assumptions The model is subject to the following assumptions:

- Capital goods, which once produced, exist in perpetuity and are produced with labour alone

- There are only two factors of productions, labour and fixed capital.
- There are constant returns to scale
- Gestation period is uniform in the case of alternative techniques.
- The real wage rate per unit of time is the same our all techniques and is constant through time
- The wage-earners consumers their entire income and the non-wage earned reinvest the whole of it
- There is no technological progress over time.
- The labour supply to sector A is perfectly elastic at subsistence wage because of unemployment in sector B.

Statement of the Model the problem is to choose between two alternative techniques of production, H and L, the former with a higher, capital-intensity than the latter.

The model uses the following notations for L techniques, the corresponding primed notations being used for the H technique.

W = wage rate per labourer per period

P_c = productivity per worker per period in department II of sector A

L_c = number of workers employes in department II

L_i = number of workers employed in department I

A = capital intensity, defines as L_i/L_c

W_c = total wage bill in department II of sector A

C = total corn production in department II of sector A

In any period, employment in department I of sector A depends upon the amount of surplus produced in department II, plus any surplus available from sector B.

Choice of Techniques and Investment Criteria The model makes the choice of technique contingent upon the investment criterion chosen for allocation of investment resources.

- 1) **Capital Turn-Over Criterion or Social Marginal Productivity Criterion.** If either of these two criteria is chosen for investment planning, that technique should be chosen which maximizes current output of consumer goods with a fixed volume of investment. From this angle, technique L (labour intensive) will be preferred to technique H (capital-intensive). This is because the former produces the largest attainable output with a fixed capital stock. The latter

produces smaller total output with the same capital stock, i.e., $\frac{P_c}{a} > \frac{P_c'}{a'}$

- 2) **MR Q Criterion** If the objective is to maximize reinvestible surplus over consumption, technique H will be chosen as against technique L. This is because technique H generates maximum surplus over consumption from reinvestment though it employs smaller labour force. Technique L generates lower reinvestible surplus through it employs larger labour force and produces more total output. That is,

$$\frac{P_c'}{a'} - w > \frac{P_c}{a} - w$$

It is this clear that if the criterion is to maximize the capital turnover or social marginal productivity, a relatively labour intensive technique should be chosen. If it

is intended to maximize the reinvestible surplus, a relatively capital intensive should be chosen.

Criticism

Sen's model has been subject to criticism as follows:

- The assumptions of the model, such as a single commodity serving both as a consumption as well as investment good, assuming labour to be a homogeneous factor, and considering capital-labour ratio as a single index of techniques of production, etc are unrealistic.
- The model does not analyse how uncertainty about the future-uncertainty regarding demand, input prices, natural causes, changes in government policy, etc. affects the choice of techniques'
- In many cases the choice regarding techniques may not be open because only one technique may be known and available.
- It is assumed that there is limited supply of labour available in the subsistence sector. The model does not consider the possibility of a limit on the supply of such labour. If this limit is introduced, optimal capital intensity would be different than the one assumed in the model.

Check Your Progress 3

- 1) What is the problem of choice of techniques? State the traditional approach to the solution of this problem.

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- 2) Examine Maurice Dobb's approach to the problem of choice of technique.

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- 3) Examine Sen's model of choice of technique.

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19.7 LET US SUM UP

Much of the economics of growth, in part, had developed within the framework of the free market economics. But the experience throughout the world had been that the free market economics failed to respond to the needs of the developing countries. Their needs are specific. These need to be addressed separately various investment decisions cannot be left to the market forces. Investible resources have to be directed into desired channels. For this purpose, there is a need for a suitable investment criterion. Economists respond to this need by formulating different investment criteria. We have critically examined these criteria in the present unit. Similarly, there is the question of technology. A choice has to be made between different alternative techniques of production. A number of approaches to the solution of this problem too have been formulated. He have examined these approached also.

19.8 SOME USEFUL BOOKS

Aggarwal, A.N. and S.P. Singh (ed.), *Accelerating Investment in Developing Economics*

Singh, D. Bright. *Economics it Development*

Merior, G.M., *Leading Issues in Economic Development*

Spiegelglas, S. and C.J. Helsh (eds.) *Economic Development*

Thirlwall, a.P., *Growth and Development*

19.9 KEY WORDS

Accounting Prices : Refer. To the values of the marginal productivity of sectors when a selection of technique has been made which produces the maximum volume of output, given the availability of resources, the pattern of and demand and the technological possibilities of production.

Shadow Prices : Refer to opportunity costs implied by a given resource allocation

19.10 SOLUTIONS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

- 1) See section 19.3
- 2) See section 19.3.1
- 3) See section 19.3.2
- 4) See section 19.3.3

Check Your Progress 2

- 1) See section 19.3.4
- 2) See section 19.3.5
- 3) See section 19.4

Check Your Progress 3

- 1) See section 19.6 and 19.6.1
- 2) See section 19.6.2
- 3) See section 19.6.3

UNIT 20 COST BENEFIT ANALYSIS

Structure

- 20.0 Objectives
- 20.1 Introduction
- 20.2 Private and Social Costs and Benefits
- 20.3 The Concept of Shadow Price
- 20.4 Discounting the Future
- 20.5 Distributional Concerns
- 20.6 Government Regulations
- 20.7 Let Us Sum Up
- 20.8 Key Words
- 20.9 Some Useful Books
- 20.10 Answers or Hints to Check Your Progress Exercises

20.0 OBJECTIVES

After going through this unit, you will be able to:

- define costs and benefits;
- distinguish between private and social costs, and private and social benefits;
- explain the concept of shadow price; and
- describe how decisions regarding implementing a project in undertaken.

20.1 INTRODUCTION

Cost-Benefit analysis (CBA) is a technique which is used to appraise and evaluate projects. The basic idea in CBA is quite simple: first identify the costs and benefits of a project and then measure them in comparable units (say in terms of money, and expressed in a single currency). Compare the benefits and the costs. If the benefits exceed the costs, the project should be accepted as resource allocation will be efficient. If, on the other hand, costs exceed benefits, then reject the project.

The desirability or feasibility of projects, whether in the private or public sector are adjudged on the basis of criteria that are rooted in the concept of profits. Profitability is contingent upon the likely costs that the project entails, and the likely returns that it generates. The two sectors, public and private, however may differ (sometimes widely) on the explicit recognition of the prices at which the value of output and the cost of inputs are to be evaluated. While the analysis of projects in the private sector generally incorporates the direct and financial costs and benefits only, the analysis of public sector projects attempts to encompass the indirect and non-financial costs also.

However, once prices of both inputs and outputs are agreed upon, any project for which revenues exceed the cost is desirable. However, since resources are finite, those that generate the maximum profitability would get priority. To evaluate projects over a lifetime, we must have its returns as well as costs in all future periods. When the private sector is faced with a choice between more than one project, it has to rank projects in terms of profitability. The net present value (NPV) is one such criterion to evaluate a project. For any project which has a cost C , in the present period and a return of R over the coming two periods and if r be the market interest rate, then the net present value of a project would be

$$NPV = -C + R/(1+r) + R/(1+r)^2$$

If the net present value of the project is positive, it should be undertaken; if not, then not. If there is a choice between more than one project, the one with the highest net present value should be chosen. Another measure of profitability is the internal rate of return (IRR), which is that rate of interest which makes the net present value equal to zero. If the internal rate of return is higher than the net present value, the investment is worth undertaking; if not, then not. However, since the internal rate of return gives no indication of size. It may sometimes be better to undertake projects with lower internal rate of return, if the magnitude of the project is of concern.

The difference in the analysis of projects across sectors arises out of choice of prices to estimate profitability (feasibility/ desirability). In most private sector projects, the prices chosen are the prevalent and observable domestic market prices. However, these prices are largely perceived to be inappropriate to adjudge the feasibility of public sector projects.

20.2 PRIVATE AND SOCIAL COSTS AND BENEFITS

Cost Benefit analysis starts with the premise that receipts are not exactly a measure of social benefits and neither are costs incurred a measure of social costs. Only under certain hypothetical conditions will the two merge, and in such a situation private and social profit would coincide.

Such a coincidence will happen if there is full employment of resources. Any extra output or project that has to be undertaken will result in drawing out inputs from another production chain or project and an increase in output in the current project has to be weighed against the loss in output from where the resources have been drawn out. Markets would have to be perfectly competitive such that, individual or firm behaviour will not change prices or wages. Not only should benefits follow from a project it will be necessary to analyse to whom the benefit accrues to. A rupee going to a rich man may be given lesser weight than a rupee going to a poor man, given that the poor man values the rupee more. There is also the question of consumer's taste over the choice of the society at large.

Private and social costs and benefits will differ not only on account of the private sector not taking into account the costs and benefits accruing to all sections of society, but to the fact that they face different prices coming from distortions within the system. Such distortions give wrong incentives to private producers for investment from the social point of view. The two measures of distortion are: i) the effective protection rate, and ii) the domestic resource cost. The effective protection rate is defined as the ratio of difference between value added at domestic prices and

that at world prices to the value added at world prices that is $\left(\frac{VA_d - VA_w}{VA_w} \right)$.

Therefore, if domestic prices are equal to international prices, the effective rate of protection is zero. The domestic resource cost is the amount of domestic resources of an industry to produce a net unit of foreign exchange. These measures although useful have limitations in the sense of its inadequate treatment of non-traded goods and inadequate treatment of factors.

Social costs differ a lot from private costs due to distortions in prices. Let us consider the Indian situation a few years ago when the exchange rate was fixed by the government. Since the government was keen on industrialisation, the exchange rate was over-valued. That is when the free market rate was Rs. 50 to a dollar; the government was selling it at Rs. 40 to a dollar. So for every dollar worth of good bought by importers, the government was losing Rs. 10. Therefore, importers bought more machinery at Rs. 40 to a dollar than they would have at Rs. 50, and the cost

was borne by the government. If \$1 M worth of goods were imported, 10M rupees worth of tax revenues were forgone, which could have been used to provide public goods to citizens.

Power and fertilizer subsidies are a few other examples where inappropriate pricing policies have led to a huge misallocation of resources. For example, the soil and climatic conditions in Northern India is fit for the cultivation of sugarcane – a water intensive crop, than Western India which is relatively dry. However, availability of cheap power subsidies in Maharashtra, has meant overuse of ground water resources by use of deep tube wells to grow sugarcane and a lowering of the water table in these areas. The cost of growing sugarcane in these regions is not just the subsidy bill being footed by the government; it also must include the higher cost to be paid for water in these areas.

Similar is the situation with fertilizer subsidy. In order to encourage agricultural output by use of fertilizers, the government gives a fertilizer subsidy. In such situations, farmers have found it profitable to grow high value crops, which would not have been possible in the absence of a subsidy. There have been instances of overuse of fertilizers by farmers leading to water sources being contaminated by nitrates. The cost of growing such crops must not only include the subsidy bill but also the higher costs due to pollution which comes about from such policies.

Concessions given to industries in the form of cheap land and subsidised transport costs to set up industries in backward regions have to be also seen from the perspective of a cost benefit analysis. In the absence of such concessions, industry would have found it unviable to set up operations. Such project appraisals have to be done taking into account the profits generated to entrepreneurs, the incomes as wages and salaries to locals which would have been difficult to generate otherwise, the subsidy cost being borne by the government in the form of cheap land and transport.

Decisions on freight transport by public sector companies also get distorted due to faulty pricing policies. In pricing decisions by Indian railways, the government has subsidised passenger travel by over-charging freight in Indian railways. As a result, much of the freight has moved from rail to road in India. Railways are a much cheaper option than road, given that the former uses coal as fuel rather than oil.

20.3 THE CONCEPT OF SHADOW PRICE

Therefore, while analysing investment decisions by firms, the set of correct prices by which it needs to evaluate is usually the ‘shadow price’. The shadow price of a good, is the net impact on social welfare of a unit increase in the supply of the good by the public sector. This idea was developed by Ravi Kanbur and welfare changes are evaluated by using a ‘social welfare function’ which is a mathematical expression of inter-temporal and inter-personal distribution of consumption. Such a social welfare function would take into account both the growth as well as the distributional concerns in society. Growth envisages transformation of present consumption into future consumption, whereas equity envisages present consumption from the rich to the poor.

The method used for shadow price calculation in this unit is based on a set of rules and guiding principles formalized in the **Cost-Benefit** manuals by Little and Mirrlees (1974) and Squire and Van der Tak (1975). These principles are summarised as follows:

- The shadow price for tradable goods should be based on world or border prices.
- The shadow price of non-tradable goods should equal the marginal social cost of production.
- The shadow price of factors should be based on the social opportunity cost in their alternative uses.

- Income distributional consequences should be explicitly incorporated in evaluating the shadow price.

However, there are limitations in the exercise of the computation of shadow prices. There are subjective judgements involved in modelling the economy, which however is not special to this exercise alone. This would be present in almost all economic analysis. Differential effects of large scale and small scale sectors on output and employment cannot be resolved due to lack of such detailed data. Other than the data availability and data quality limitations, certain technical details need to be understood. Public Income that is earmarked for a certain project (one which is not easily available) is less valuable than the income that can be put to 'any' use. Income available in the form of freely convertible currency is more valuable, than one in the domestic currency which may not be freely convertible. The numeraire should ideally be the uncommitted public income measured in convertible currency (free foreign exchange, valued at the official exchange rate). The numeraire should be such that it retains a constant purchasing power; as such it entails a description of a bundle of goods and also a measure of a composite price index of this bundle (measured by the change in the value of this bundle at accounting prices). The price index, like the welfare function, should be evaluated for different groups/classes of income earners. Also, the bundle of goods and services for each class should be the one that is bought at the margin of consumption expenditure. Despite all its weaknesses, this framework has the advantages of a greater feasibility of working at a greater level of dis-aggregation than would be possible in the case of a general equilibrium model. The data requirements are reduced to a more manageable level.

Check Your Progress 1

- 1) What are the reasons for the divergence of private costs and social costs?

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- 2) Explain the concept of shadow prices.

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20.4 DISCOUNTING THE FUTURE

Apart from the problem of choosing appropriate shadow prices, there is also the problem of choosing an appropriate discount factor, to value the future. If capital markets were perfect, the market interest rate would reflect the proper discounting of the future. Given the distortions in the system of taxes and subsidies, the social rate of discount is different from the market rate of discount captured by $1/(1+r)$, where r is the market rate of interest. While deciding on an incremental saving ΔS , households expect an incremental consumption of $\Delta S(1+r)$. Similarly incremental

expenditure of ΔC by firms would lead to an incremental gross revenue ΔR . The after tax incremental net revenue would be $\Delta R(1-t)$ and this should at least be equal to $\Delta C(1+r)$ for the investment to be undertaken. Therefore only for a gross investment of $\Delta C(1+r)/(1-t)$ would the investment be undertaken. Therefore an amount of resources $\Delta S + \Delta C$ invested today gives $\Delta S(1+r) + \{\Delta C(1+r)/(1-t)\}$. Therefore, the rate that is applicable in this situation is $\Delta S(1+r) + \Delta C(1+r)/(1-t) - \Delta S - \Delta C / \Delta S + \Delta C$. Note that in the absence of taxes, this rate would exactly equal the market rate of interest r , and therefore the appropriate social discount rate can be computed.

The social discount rate in this situation was easy to compute as the returns in future periods were assumed to be known for certain. In many circumstances, the returns cannot be evaluated for certain. There are delays in the completion and implementation of a project leading to escalation in costs. Some of the negative effects of a project such as the extent of environmental damage due to the implementation of hydro-electric projects, the costs to a society due to submergence, come out clearly only once the project is over. In such cases we would have started with an improper computation of the social discount rate. In such cases lengthy debates arise before the implementation of such projects and people take extreme positions.

It is not only in the context of risky projects that one is unsure of the proper discount rate to be taken into account. Take higher education for instance. Even if one does not have the resources today to undertake higher investment, it may make sense for any individual to go for higher education by borrowing today, taking into account the future income streams that will come about. However, if people are unsure of their job prospects after the investment, they may not choose to go for it. In this situation there is a case for subsidising education by the government, such that anybody who is academically able goes for it and the society as a whole achieves a higher income level in the long run. Likewise even in the sphere of health, individuals by themselves may not invest enough in medical insurance, and preventive healthcare. This increases the probability of incidences of disease and accidents in the future, and in this case public provision of health care may be advocated to take account of the gains reaped by society in the long run.

20.5 DISTRIBUTIONAL CONCERNS

The differential impact of any project on the population is also a matter of concern in cost benefit analysis. Normally by Pareto criterion, if a project leaves some people better off and no one worse off it is acceptable. However, even such projects which are acceptable by the Pareto criterion, may be opposed on the ground that it increases inequality. A standard measure of inequality is the Gini coefficient which is based on the sum of absolute income deviations between all possible pairs of individuals in society. Think of a situation before the project of 5 individuals, where 4 persons have no income and one person has 10 units. If after the project 2 persons have 10 units and 3 have none, then although this situation is better from the Pareto criterion, inequality would increase after the project. This is because there is an absolute income difference of 10 units each with the person who has income now and did not have it before and persons who still do not have it. This absolute difference between these pairs was zero before the project was undertaken.

A standard way to evaluate the welfare implications of a particular project would be from a utilitarian perspective implying greatest good for the greatest numbers. Since marginal utility is more to a poor individual rather than to a rich, welfare from a utilitarian perspective is maximized if more resources from any investment is directed towards the poor, such that the marginal gain from a project is equal for all individuals.

If after the implementation of a project, the poor in a society become worse off, the project would be evaluated to have imposed a net cost to society from the Rawlsian perspective. A society would be thought to have attained its peak, when the worst off person becomes the best off in society. It would therefore imply that individuals from a society agree to a wealth distribution such that all individuals attain the same welfare. Therefore, from a Rawlsian perspective, the benefits from any project are its impact in improving the welfare and incomes of the poorest of the poor in society. By both the Rawlsian and the utilitarian perspective a transfer from the rich to the poor results in welfare gain although both perspectives differ on the extent of transfer that would maximize the gains in society.

Check Your Progress 2

- 1) Discuss the method of discounting in cost benefit analysis.

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- 2) How would you address problems of distribution in cost benefit analysis.

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20.6 GOVERNMENT REGULATIONS

Government regulations are so designed to ensure that policies undertaken in such a framework results in the largest aggregate social benefit: i) it undertakes policies to ensure that society does not experience widespread unemployment; ii) it follows a progressive tax system to ensure equity to a certain extent, iii) it sometimes offers minimum support price for certain agricultural goods to ensure a steady production, and iv) it undertakes rules and regulations to ensure that external dis-economies are minimised. For example it might impose taxes on factories causing air pollution for the benefit of the society at large. It is assumed that when private entrepreneurs operate with a profit motive in a proper regulatory framework, the best results are obtained.

In an effort to develop fast, most developing countries have paid good attention to industry and agriculture while neglecting health and education. Huge investments in large projects create a shortage for scarce capital resources, leading to inflationary tendencies in the economy. In such cases, governments might have to resort to price controls, in order to encourage investments in sectors that would have been relatively unprofitable. With inflation, and with government managing the exchange rate, our exports become uncompetitive. The government therefore needs to devalue currency at suitable intervals of time. Interest rates in developing countries have a wide variation, coming out of distortions from within the system and therefore the need for government intervention. Large projects might be undertaken in developing countries

since they may have positive feedbacks in other sectors of the economy in which case its profitability cannot be an indicator of the net social benefit. In order to encourage such projects the government might have to give suitable incentives. Developing countries normally earn their export earnings from very few commodities, which make them susceptible to external price shocks. In order to diversify the export basket, the government might give suitable subsidies to producers of a wide variety of export products. Investment may be in short supply in developing countries due to lack of savings, in which case the government may act by giving suitable tax breaks if individuals invest in particular saving schemes.

Check You Progress 3

1) Let the government opt for a program of mass immunisation (as in the case of polio eradication) which may be financed by public money, but the medicines or vaccine (polio drops) may be procured from the public sector producers and the administration and also the administration of the vaccine may be contracted out. Evaluate this program to one where private parties opt for the vaccine. In your answer take account of the following:

- a) the probability of infection in the absence of immunisation drives.
- b) the loss of earnings capacity of an infected person.
- c) the direct cost of the medicine.
- d) the improved productivity and man days saved on account of the immunisation.

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2) State some important areas in which the government intervenes in developing ****

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20.7 LET US SUM UP

This unit discussed the standard measures of project evaluation, namely the net present value and the internal rate of return. These measures are very sensitive to the choice of prices at which both outputs and inputs are evaluated and the choice of discount rates. The public sector and the private sector may have different valuations

for inputs and outputs, and in this context the notion of shadow cost comes in useful which reflect the true cost to society. While thinking of benefit as well as cost, we also need to take into account as to which section of the society gains and which section loses due to the implementation of a project, such that suitable compensation measures can be made in order for the project to be undertaken. Finally, since the real world is far from perfect in the sense that social and private profits would converge, the government might have to come up with appropriate interventions and regulations under which individuals and private entrepreneurs operate, such that actions taken under such an environment result in the largest social good.

20.8 KEY WORDS

Discount Factor: A number with

Shadow Prices: These are prices that do not benefit exist in the market but are the

Social Discount Rate: The discount rate computed keeping in mind social costs and benefits.

20.9 SOME USEFUL BOOKS

Dasgupta, A.K. and Peace, D.W. (1972), *Cost Benefit Analysis Theory and Practice*. Macmillan, London

Dinwiddy, Carolive and Teal, Francis (1996), *Principles of Cost Benefit Analysis for Developing Countries*, (UK. Cambridge)

Kirkpatrick, Colin and Weiss, John (eds.) (1996) *Cost-Benefit, Analysis & Project, Appraisal in Developing Countries*, Edward Elgar, Chellentian UKA Brookfield, Vermont, US

Little, I. M. D. and Mirrlees J.A. (1974) *Project Appraisal and Planning for Developing Countries*. Heinemann Educational Books Ltd., London

Stiglitz Joseph, (1988) *Public Sector Economics*, (2nd edn.) W.W. Norton and Company, New York

20.10 ANSWERS OR HINTS TO CHECK YOUR PROGRESS EXERCISES

Check Your Progress 1

- 1) See Section 20.2
- 2) See Section 20.3

Check Your Progress 2

- 1) See Section 20.4
- 2) See Section 20.5

Check Your Progress 3

- 1) See Section 20.6
- 2) See Section 20.6

UNIT 21 ROLE OF PLANNING

Structure

- 21.0 Objectives
- 21.1 Introduction
- 21.2 Meaning and Features of Planning
- 21.3 Need for Planning
- 21.4 Nature and Scope of Planning
 - 21.4.1 Planning in a Capitalist Economy
 - 21.4.2 Planning in a Socialist Economy
 - 21.4.3 Planning in a Mixed Economy
- 21.5 Democratic Decentralised and Indicative Planning
 - 21.5.1 Democratic Planning and Totalitarian Planning
 - 21.5.2 Centralised Planning and Decentralised Planning
 - 21.5.3 Indicative Planning and Imperative Planning
- 21.6 Micro-level Planning
 - 21.6.1 Rationale of Micro-level Planning
 - 21.6.2 Problems in Micro-level Planning
- 21.7 Plan Models
 - 21.7.1 Elements of Planning Models
 - 21.7.2 Types of Planning Models
 - 21.7.3 Factors Affecting Choice of Planning Models
 - 21.7.4 Uses of Planning Models
 - 21.7.5 Criticism of Planning Models
- 21.8 Let us Sum Up
- 21.9 Key words
- 21.10 Some Useful Books
- 21.11 Answers to check Your Progress.

21.0 OBJECTIVES

After reading this unit you will be able to:

- explain the meaning of planning as an instrument of resource allocation;
- identify the features of the process of planning;
- state the need for planning in the development process;
- distinguish between different types of planning and explain the relative merits and demerits of each type of planning;
- describe the significance of micro-level planning in the context of national planning; and
- explain the structure of plan models and their usefulness in planning for economic development.

21.1 INTRODUCTION

Planning can be defined as a consciously directed activity with predetermined goals and predetermined means to carry them out. It is a mechanism whereby the use

pattern of resources is carried out. For many countries development has been the major reason for the adoption of planning. This consideration has weighed with all types of countries - socialist, mixed economiser or capitalist - and countries at different levels of development - developed and underdeveloped. This is so because the basic problem and the essence of development are the same no matter how the countries differ in respect of institutions and historical stages of growth. These differences are no doubt important and do affect the pace of development and the manner in which development takes place, but these not override the basic requirement that if development is to be compressed in a given period, planning is needed. No planning can take place in a vacuum; its goals and means must be worked out in the context of the conditions of the country under consideration including the prevalent institutional set-up. This, in turn, also determines the nature of planning: centralised or decentralised planning, indicative or imperative planning, democratic or totalitarian planning, national or micro-level planning. Each type of planning needs the support and strength of a sound plan model. A plan model is essentially an operational, decision or policy model.

These are the different aspects of planning that will be addressed to in the present unit.

21.2 MEANING AND FEATURES OF PLANNING

Planning can be defined as a consciously directed activity with predetermined goals and predetermined means to carry them out. It can be conceived as an instrument or technique or mechanism where by the use pattern of resources is carried out.

The essential basis of planning, it would be clear, is that it is a consciously directed activity. This element of planning can be better appreciated if we juxtapose it with an activity which is not consciously directed, such as market mechanism. In a market system, activity is spontaneous in the sense that nobody can influence what is to happen, nor does anyone attempt to influence the course of events. Producers and consumers base their decisions on market prices. The prices, which themselves are the outcome of the interaction of supply and demand, coordinate and bring consistency in the decisions of producers and consumers. In this process, resources get allocated to different lines of production and factors get rewarded for their contributions to production. The basic problems of production and distribution, associated with scarce resources in the face of unlimited wants, get solved. But nobody solves them consciously - nobody prepares blueprints for the solution before the process starts, nor does anybody execute any predetermined scheme for the use of resources. Everything happens by itself. Planning is just the opposite of market. It envisages what to happen and how that is to happen. In other words, *two basic elements of planning are (i) the goals, and (ii) the means.*

- i) *The goals* mentioned in different plans may and in fact do vary because planning has been introduced in countries with different socioeconomic and political structures, levels of development, etc. In a plan there may be one single goal, or more than one goal. In case there are many goals, they need to be placed in order of their importance to the economy. In other words, their priorities must also be mentioned. Furthermore, these goals may be categorised in terms of their periods for which different types of plans are designed.
- ii) *The means* are broadly constituted of two elements: (a) policies, and (b) instruments.
- iii) *The policies* describe the outlines of actions for the fulfilment of plan goals. The policies chosen from the alternatives have to go well with the aims. A different framework of the ultimate end will lead to a different set of policies. Thus policy formulation is not a mechanical arrangement of actions to suit a plan, for no economic planning can be done in a social vacuum.

- iv) *The instruments* may be defined as the qualitatively and quantitatively defined means of action by which it is intended to achieve the plan goals. These instruments are the means by which planned resources are matched with planned requirements. These instruments may be (i) administrative instruments like taxes and subsidies, fixation of prices, wages, interest rates, etc., or (ii) economic instruments, i.e., those means which aim at fulfilment of plans by direct stimulation of the material interests of those who carry out their implementation.

Features of Planning

While discussing the meaning of planning so far, we have only touched upon the substance of planning as a technique. It should now be easy to list the features of planning. These are as follows:

- 1) *Institutionalised Activity*: The planning process presupposes existence of appropriate 'institutions' through which it is implemented. Planning involves at least four activities: (i) preparation of plans, (ii) making of decisions in respect of plans, (iii) execution of plans, and (iv) control of plans. Appropriate institutions vested with mandatory powers and responsibilities have to be constituted to carry out these activities.
- 2) *Quantified Goals and Resources*: Given the ultimate ends and general directives by the government, planning involves quantification of goals. For the quantification of goals, it is essential that resource availabilities be expressed in number. These cover physical resources (land, forests, labour, power, etc.) and financial resources (bank deposits, foreign exchange, public revenue, etc.).
- 3) *Programmed Action*: In planning, the future is shaped in terms of the goals to be fulfilled and the means by which these goals are to be achieved. This shaping of the future is written into the various targets alongside the necessary steps for the achievement of those targets. These together constitute a programme of action.

The goals present the line of direction along which an economy is to be guided. The pace is indicated by the period over which goals are to be fulfilled. The movement of the economy in the indicated direction is made possible by policies and instruments. Thus, any plan becomes a preconceived action.

- 4) *Periodic Action over a Definite Area*: Planning has a time dimension as well as an area dimension. These two features pinpoint the period during which planned action is contemplated and the area within which planning is to operate. It is in this context that plans are formulated with programmes to be achieved and measures for their achievement. Planning thus gets bound in time and space. These limits in a sense act as boundaries for the action to take place.
- 5) *Rational Socialised Activity*: Being a socialised activity, planning involves decision-making at the public level. Such matters as choice of goals, of such magnitude that government alone can be the medium to make the choice. It is the government that can look beyond individual needs and extend its vision geographically to comprehend larger areas and larger populations. Further, it is public authority that can evaluate the use pattern of resources in terms of social costs and social benefits. It is, moreover, public authority that can give direction to the economy acceptable to society. For all such matters, government activity becomes an important feature of planning.

In short, planning includes a plan and its implementation. It is characterised by a programmed action which is social and rational in nature and is quantified.

21.3 NEED FOR PLANNING

Notwithstanding all the clichés like market-friendly state, consumer-friendly markets, etc. economic planning continues to be the foundation stone of economic policy-makers all over the world. The need for planning arises out of different factors. These factors can be grouped into two categories: (1) non-economic factors, and (2) economic factors.

- 1) *Non-economic factors:* Planning as an institutional means was found convenient by those who sought the fulfilment of the aspirations of countries liberated from colonial rule. Almost all such countries adopted planning right from the inception of their independence.

Symbol of sovereignty: Apart from the need for telescoping development into a few years, newly independent countries found in planning a symbol of asserting their liberation and sovereignty status. Development planning enabled these countries to identify themselves with the common goals they wanted to achieve as also with the means, for which they were prepared to give their best. Such a national personality infused in them a sense of sovereign in respect of what to do and how to do it.

Break from the past: Additionally, these countries with backwardness hanging round their necks like a millstone, wanted to stage a dramatic break from the past. Such an objective symbolised in plans in the form of higher growth rates and rapid industrialisation, etc., put their minds off from past misery and all the humiliation associated with it. The optimism associated with it made them look to the past only to draw lessons, and to mobilize efforts commensurate with the task ahead.

- 2) *Economic Factors:* The various economic factors that make it imperative that economic planning, in some form or the other, be adopted as an instrument of resource allocation can be briefly stated as follows:
 - i) Since resources, whether natural, material, capital or human, are severely limited, planning provides a method of rational and considered choice for securing the optimum combination of inputs.
 - ii) Planning helps to identify those deficiencies in the economy and the social structure which demand the largest attention from the standpoint of economic growth.
 - iii) A plan for mobilising resources and savings is a necessary counterpart of the scheme of investment. By posing various critical problems in development and attempting to give them a quantitative dimension, planning is calculated to lead to a higher degree of capital formation than might otherwise be attainable.
 - iv) By drawing attention to the social prerequisites of growth, planning also paves the way for the acceptance of large institutional changes. The very processes associated with planning and the implementation of plans enlarge the scope for public participation and cooperation.
 - v) It may be found desirable to weight more heavily than the market does the interest of future generation. Indeed, many people themselves might be willing individually to make sacrifices for future generation, but are discouraged from doing so because of their belief that many others would not voluntarily do likewise. A role for government planning is thus called for to ensure that potential free-riders play their part. The Galenson-Leibenstein Criterion (see Unit 19) illustrates how a planner might choose to extract higher investment now to promote a more rapid rate of growth later.

- vi) As planning techniques improve and more precise statistical data become available, the inter-relationship within the national economy can be seen more clearly and to that extent the effects of different policies and measures can be traced more systematically.

However, practical success in planning is often limited by a variety of factors, more specifically inadequate data, weaknesses in the social structure, lack of trained personnel, and inadequacies of organisation and management, particularly in large public sector enterprises. A large number of remedial measures may be required to correct the situation.

Check Your Progress 1

- 1) What do you mean by planning? Bring out its essential elements.

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- 2) Highlight the major features of planning.

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- 3) State both non-economic and economic reasons that bring out the need for planning.

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21.4 NATURE AND SCOPE OF PLANNING

The nature and scope of planning is largely determined by the type of economic system within which it is practised. Economic planning can be and is practised alike in a capitalist, i.e., a free market economy, socialist, i.e., a centrally controlled economy and mixed economies. However, its role differs in each of these systems.

21.4.1 Planning in a Capitalist Economy

In this type of economic system, planning is more of an indicative type. It is democratic in nature. In this type of planning, the sphere of state intervention is limited to (a) formulation of the plan, and (b) adoption of indirect controls. The state can only influence market forces to decide their course of action. The absence of policy instruments, that are able to ensure that overall and individual sector targets are met, limits the effectiveness of this type of planning.

21.4.2 Planning in a Socialist Economy

In this system planning is of an imperative type. It is totalitarian in nature and works on the basis of directions. It is made imperative on the production units to follow the plan and to fulfil the targets.

21.4.3 Planning in a Mixed Economy

In this system planning is a more difficult task. It may have to bear the strains and stresses of the other two systems. On the one hand, economic planning to be meaningful cannot be merely of an indicative type nor can it be, in the absence of monopoly control over means of production, of an imperative type. It is to be judicious mix of the two. The state has to adopt a proper mixture of direct and indirect controls. Whereas, on the one hand, it cannot give the impression of its being non-existent, on the other it cannot afford to be too rigid either.

21.5 DEMOCRATIC, DECENTRALISED AND INDICATIVE PLANNING

As stated above, the nature and scope of planning is determined largely by the type of economic system in which it is practised. In a centrally-controlled socialist economy, economic planning is centralised, totalitarian and prescriptive in nature. In a free-market economy and in a mixed economy, economic planning, more generally is democratic, decentralised and indicative in nature.

21.5.1 Democratic Planning and Totalitarian Planning

An important component of the planning process is the implementation of a plan. The methods through which a plan is implemented are of great importance. Broadly speaking, there are two methods by which a plan is implemented. These are (i) directions, and (ii) inducements. Directions as a method of plan implementation are used in what is called *planning by direction* or totalitarian planning, and inducements are used in *planning by inducements* or democratic planning.

1) Planning by Direction or Totalitarian Planning

Planning by direction embodies the means to fulfil plan targets through "orders and instructions". These are generally legal and are therefore binding on the operating units of an economy. This method, thus, assumes the form of compulsion as implied in law. In the operational sense, this compulsion takes the form of directives to fulfil targets as per programmes of the plan such as production figures, delivery schedules, quota fixing, price controls, foreign exchange use, etc.

Planning by direction has its positive and negative aspects.

On the *positive* side, persons in charge of enterprises are considered successful if the rules and regulations written in the laws are carried out religiously. The rewards for successful operations are higher economic posts, higher political status or assignments and public applause and decoration.

In its *negative* aspect misapplications or non-application of the laws and regulations are treated as failures which invite such punishments as demotion economically and/or politically, loss of job, transfer to an unattractive place of work, etc.

Merits of Planning by Direction: It is claimed that planning by direction alone can make planning a reality. Like the military command where plans of defence or offence are carried through orders and instruction, planning by direction implies implementing plans like a military strategy. It also implies that, its execution is to be conceived as a military strategy, there should be compulsive circumstances like those associated with the military situations. Similarly, in those countries where the growth process is constrained by primitive institutions and attitudes it may be necessary to pull them down with precision and accuracy. Directors are required in such a situation.

Demerits of Planning by Direction: However, planning by direction suffers from various limitations. Among these, the more important are as follows:

- i) *Influences:* This method leads to imbalances (i.e., surplus in one and shortages in others), with shortages dominating the scenes. This is happening for the simple reason that hundreds and thousands of backward and forward linkages that develop in the process of production cannot always be coordinated in an effective manner.
- ii) *Inflexibility:* Changes in the plan or its implementation at subsequent stages are difficult to be made despite the desirability of doing so. The reason is that planners, after having elaborated on the plan involving many decisions and after having issued directions and instructions, are generally reluctant to make changes because changes in one part of the plan cannot be made without simultaneous changes in many interconnected activities.
- iii) *Standardisation:* Planners often opt for a few commodities and produce them in standardised forms because this simplifies their job. This no doubt makes for smooth planning as it also enables the country to speed up the rate of production of such goods. But it needs hardly be emphasised that this also freezes the possibilities of improvements in these goods and many other goods having backward and forward linkages.
- iv) *Bureaucracy:* The involvement of bureaucracy in implementation of the plan results in evils like the loss of democracy, inefficiency etc.

2) **Planning by Inducements or Democratic Planning**

Planning by inducements incorporates elements of material incentives which are associated with the market. For this reason it is also called the method of market incentives. These are not legally binding. Nor do they take the form of laws. Hence, fulfilment of a plan is not legally binding on the operating units. In the operational sense, these incentives take the form of changes in prices, interest, profit and loss, etc. These are not and cannot be quantitatively provided with much precision in the plan in the sense that no quantitative relationship can be planned or laid down between the changes in material incentives and the resulting economic behaviour of people.

The nature and amount of material incentives, however, differ depending upon the institutional set-up of countries. In capitalist economies these predominate for the simple reason that the functioning of the system is conditioned by profits. In mixed economies, the extent of these incentives depends upon what proportion of the economy is controlled by the private sector. Economic incentives are, however, not restricted to the market forces or the sector where the private sector operates. In the public sector, in mixed economies, these incentives are used on a restricted scale as, for example, in the form of wages, salaries and bonus for employees.

Merits of Planning by Inducements: Planning by inducements coaxes individuals and groups to work according to the plan requirements. This method has its own advantages.

- i) By experience it has been found that the working of planning by inducement has resulted in smoothness and flexibility. *One* it has often helped in the elimination of or reduction in imbalances or the extent of surpluses and shortages. *Two*, it has been possible to make adjustments in planning to incorporate changes in resources, technology and taste, subsequent to the finalisation of plans and even after they are in operation. *Three*, it becomes possible to produce a variety of consumer goods and thus standardisation is avoided, due mainly to the fact that enterprises have more freedom of change and adjustment. In brief, this method imports smoothness and flexibility to the working of plans.
- ii) Since quite a significant part of the implementation of plans depends upon material or market incentives, this method is in no need of an army of bureaucrats to carry out the plan, as is the case under planning by direction.

Demerits of Planning by Inducements: This method has its own shortcomings and limitations. Among these, the following may be mentioned.

- i) Responses from the economy as a result of the application of this method are slow and uncertain. Results take shape at a very slow pace. In view of this, it is not possible to make use of planning in crucial sectors like heavy capital goods industries where inadequacy of response can put the whole economy out of gear.
- ii) The applicability of this method is further limited because of its relevance to only certain situations, and to certain small tasks. The incentives work well when tasks involved are small in the sense that these are within groups of individuals.

To sum up, it is true that planning to be meaningful should make use of the instrument of direction and command. But the rigidities and inflexibilities associated with this type of planning led to its death. The system came to be discarded worldwide, even in hotbeds like the erstwhile Soviet Union and China. It is democratic planning that has won the favours and is the opted method in all planned economies.

21.5.2 Centralised Planning and Decentralised Planning

The division of planning into centralised and decentralised planning is basically made in terms of the conception of the mechanism for making economic choices. Two predominant mechanisms for making economic choices are: (i) central planning office, and (ii) market.

Under centralised planning choices are made by the planning office. Of course, it does not mean that all the decisions are thus centralised. It is only the main decisions that are made at the central office, although what can be regarded as the main decisions may vary with time and circumstances. However, we can list certain items about which decisions ordinarily are made by the central planning agency. These decisions are: prices, volume of investment, amount of wages and broad outlines of production and investment: Decisions of current kind or those which are intended to deal with private problems are excluded from the jurisdiction of the central planning office.

Decentralised planning is associated with capitalist economies for the reason that the market mechanism prevails in such cases. The principal characteristic of

decentralised planning is the dominance of the market in decision-making. We may explain this point in two different contexts.

In the first case, we may refer to planning in capitalist economies and mixed economies. In this case, the market dominance is obvious. The formation of market forces, adjustment of disequilibria through changes in plans, investment on account of private sector, etc., predominate despite governments taking many important decisions, and despite the regulation and control in such economies.

The second case is that of a socialist economy. In a socialist economy, Lange and Taylor, largely to refute the arguments of Vonmises, Hayek and Robbins - that economic calculations are impossible in a socialist economy - have suggested how choices can be made by distributing decision-making among the central office, public enterprises, and private enterprises (if there are any) in a socialist economy.

According to them, the *decisions to be made centrally by the central office* are: total sum of investment, prices to be charged in transactions between public enterprises, rate of interest, etc. These decisions of the central office are to be made in accordance with certain rules.

The decisions which have market attributes relate to prices and rate of interest. It is envisaged that in case demand exceeds supply, then prices and interest may have to be raised. And if demand falls short of supply, these prices and interest may have to be reduced. Thus the equilibrium between demand and supply has to be brought about by changes in prices and interest. Besides, it is suggested that selling prices of consumer goods as also wages should fix themselves through market conditions.

The decisions to be made by enterprises are: the nature and amount of current production and nature and amount of investment. The decisions in respect of current production are to be made on the basis of the prices fixed by the Central Office and the selling price to the consumers. These decisions in turn will determine the nature and amount of the purchases and sales of these enterprises. The decisions with regard to investments will be based on their productive capacity and the prices and interest already fixed by the central office.

Prices of raw materials, equipment and interest rates, though determined by the planning office, must be changed after disequilibrium in the demand and supply of products and investments by enterprises are affected almost as these would be in a unplanned economy. Hence the essence of such an economy is like that of a market economy.

Relative Merits and Demerits

Both centralised planning and decentralised planning are beset with many problems. These can be better appreciated with reference to the following points.

- i) **Compatibility:** In the case of decentralised planning it is difficult to ensure compatibility between what the plan requires and what the market does. For example, it is always possible that market expectations about future demand may turn out to be higher or lower than anticipated. In the former case, more goods than necessary will be produced, and in the latter case, less goods than necessary will be produced. In the former case, there will be a wastage of resources and in the latter case resources would not have been properly utilized. Centralised planning assures full compatibility.
- ii) **Adjustment difficulty:** In decentralised planning, adjustments in planning are made difficult because of uncertainty about the reactions of the market. Any adjustment made brings about market reactions. These reactions may magnify or minimise the consequences of these adjustments. Since it is not possible to know in advance the reactions of the market, adjustments are made difficult.

- iii) **Non-planning:** Socialist planners content that decentralised planning cannot be regarded as genuine planning for two reasons: *One*, many important decisions are made in the market. As a result of this, the choices take on the contents of market and not that of non-market determined choices. *Two*, coordination of innumerable decisions and balancing of demands and supplies of various goods and factors are not done before (i.e., ex-ante) as it should be in planning, but only after (i.e., ex-post) the event, as it happens in a market economy,
- iv) **Difficulties of calculations:** In case of centralised planning, one big hurdle is in respect of making calculations about price of all the goods and resources.
- v) **Inadequate control and information:** Centralised planning presumes complete central control over a major part of the economy and complete up-to-date information about innumerable goods and factors. Such restriction limits the applicability of this type of planning.
- vi) **Rigidity and Bureaucracy:** Theoretically, at least every planning system has methods of making adjustments to accommodate changes associated with such factors as the discovery of new resources, new technologies, new tastes and demands, etc. Centralised planning too can have a mechanism to meet these situations. But in practice, rigidity and inflexibility develop. These make adjustments difficult.

The rigidity in centralised planning is worsened by the large bureaucracy. Bureaucracy snuffs dynamism out of the growth process itself.

To sum up, planning, decentralised or centralised, is beset with serious problems. Market as a mechanism of decision-making cannot be dispensed with.

21.5.3 Indicative Planning and Imperative Planning

The distinction between indicative planning and imperative planning is particularly visible in the sphere of implementation, although the pattern of difference is also very much to be seen in the formulation of plans. Indicative planning is concerned essentially with indicating what is desirable, with the expectation that the economy will conform to it. Imperative Planning not only plans what is desirable but ensures that the economy shapes itself as per plan requirements.

- 1) In **indicative planning:** the essential function of planning is coordination of different economic units, with the objects and methods of coordination differing in different situations. We can classify coordination in terms of three approaches (i) the forecasting approach, (ii) the policy approach, and (iii) the corporate approach.
 - i) **Forecasting Approach:** In this approach, individuals or groups in the economy are provided with information in the form of forecast or projections into the future. This information is to act as a guide to their decision-making. Of course, indicative planning is not merely prediction of the probable or feasible future; it will also specify a desirable future, in terms of growth rates for the economy, including also the internal and external equilibrium. Such a forecasted future helps in providing a solution to the basic uncertainty to which units in these economies are subjected to. This it does in three ways, (i) It makes the future path of the economy transparent and foreseeable and thereby reduces the risk of individuals. (ii) This collective forecasting at the national level makes future economic activity coherent or consistent as a whole. (iii) It projects a desirable image of the future for every one. While this approach makes the future transparent, coherent and desirable, and

coordinates the units in the model of an economy, it does not necessarily ensure coordination in actual practice because it leaves implementation out of the picture.

- ii) **Policy Approach:** Policy approach boils down to the coordination of the activities of the government and the achievements of the targets set for the whole economy using the levers of policy variables. It does two things. Directly, this type of planning coordinates the policy-making of government within a coherent whole. Indirectly, the rest of the economy is steered doing the guidelines of government policy.
- iii) **Corporate:** The corporate approach envisages the coordination function of indicative planning at all levels. In the first place it seeks coordination of the behaviour of economic groups, which hold market power. In the second place, it coordinates the relation between public and private activities. Under, this approach, an outline of a plan is prepared by the government. Then it is discussed in detail with representatives of management, trade unions agricultural interests, consumer groups, financial community, government officials and other experts. Thus, planning has an internal or endogenous strength for its execution.

- 2) **Imperative Planning** is essentially planning wherein the implementation is provided for along with its formulation. In other words, both aspects of planning - its preparation and implementation - are sure and certain; the latter part is written into the plan in as definite a manner as the first. The logic of imperative planning is relatively simple. Once a plan is drawn up, its implementation is a matter of enforcement. For this reason it is also called directive planning.

The enforcement of an imperative plan may be preferred through (i) a command system, or (ii) a price system.

- i) In the command system, it consists of a set of directions to economic units to fulfil plan targets which are binding on them. The state ensures the necessary supplies as per scheduled laid down in the plan.
- ii) In the case of price system as a chosen medium for implementation, an integrated price structure is evolved to ensure that resource use conforms to the plan objective.

As in indicative planning, forecasting has its place in imperative planning, but its placing is totally different. In indicative planning, besides helping in plan formulation, forecasting is a means for coordination of the various groups in the economy. In indicative planning the mere forecast is considered enough for the different economic units to conform to a visualised future. Forecast itself is conditioned by the past and likely future behaviors of the various economic units including that of the government. In the case of imperative, planning forecast is as much conditioned by past plans as by the future perspective that the society as a whole sets before it. Forecasting under it is a mere technical supplement to plan-making.

To sum up, indicative planning is concerned essentially with indicating what is desirable, with the expectation that the economy will conform to it. Imperative planning not only plans what is desirable but ensures that the economy shapes itself as per plan requirements.

Check Your Progress 2

- 1) How does the nature of planning differ in different economic systems?

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- 2) Distinguish between democratic planning and totalitarian planning. Also weigh their relative merits and demerits.

- 3) How is decentralised planning different from centralised planning?

- 4) Compare indicative planning with imperative planning.

21.6 MICRO-LEVEL PLANNING

Micro-level planning is carried out within the framework of a national plan in order to better meet the special needs of a region. Micro-level planning is advocated for different reasons.

21.6.1 Rationale of Micro-level Planning

The rationale of micro-level planning is to be found in the following arguments:

- 1) **Special needs:** There are special needs of a region which require separate treatment because they are not properly or fully dealt with in national plans. While national plans do meet some needs of regions, they do not necessarily fulfil all those needs which are peculiar to regions. In case such regional needs are important for people of a region, they have to be provided for in a separate micro-level plan.
- 2) **Special capabilities:** Certain regions are endowed with special capabilities like the availability of certain types of labourers, or skills, or certain natural factors like proximity to sea routes to other countries, etc. Development of these capabilities may be in the interest of national development, apart from the beneficial effect for the people of these regions.
- 3) **Regional differences:** In countries with continental dimensions, regional variations in terms of levels of economic development, natural resources, culture and language, etc., are so large that it becomes necessary to have micro-level plans to accommodate regional peculiarities and aspirations into the national plan.
- 4) **Regional industries:** Regions have industries which are dependent upon local resources for production and local demand for the marketing of goods. Obviously, such cases cannot be provided for in the national plans. Micro level plans are the devices to develop such resources and to cater to the regional market.
- 5) **Initiative and cooperation:** Micro-level plans act as rallying points for encouraging local initiative and seeking cooperation of the people for the execution of the national plans also. People of the region see in their plan the picture of their expectation and work hard for its realisation. In the process, they also willingly give their best for the national plan.

21.6.2 Problems in Micro-level Planning

In the process of integrating micro-level plans into national plans, there are various types of problems which need to be solved. The main problems are as follows:

- 1) How much will be contributed by the region's non-shiftable industries themselves in the fulfilment of this objective with a given investment?
- 2) How much will be contributed by national industries to the achievement of this aim?
- 3) In the case of national industries, it has to be seen as to how much demand for the products of these industries originate inside a region and how much outside the region.
- 4) There are problems associated with the location of shiftable industries. For this it is important to look into such matters as resources for and demand of products available within a region and the degree of foreign competition, etc.

To sum up, micro-level planning is a useful component of national planning. It serves best the purpose of meeting regional aspirations, exploiting regional resources and capabilities, and promoting the implementation of national plans, if they are correctly fitted into them.

21.7 PLAN MODELS

You have already studied about different types of growth models. These models set out the quantitative relationships among the critical variables in the process of economic growth. They are mainly descriptive models. In contrast, operational, decision or policy models are known as development models. When development models are used to solve certain planning problems, they are referred to as planning models.

21.7.1 Elements of Planning Models

The important elements of planning models are as follows:

- 1) **Objectives of Economic Policy or Dependent Variables:** When a plan is formulated, it must lay down the goals of economic policy to be pursued or maximised under the plan. Normally a plan may have one or more of the following objectives:
 - i) A targeted increase in per capita income
 - ii) A targeted increase in employment
 - iii) A relatively stable price level
 - iv) Equilibrium in the balance of payments
 - v) Reduction of inequalities in income distribution
 - vi) Balanced regional development
 - vii) Diversification of the economy through structural change

These objectives of the plan are specified as dependent variables of the model.

- 2) **Instrument or independent variables:** These are the policy measures which need to be adopted to achieve the specified objectives of a plan. The instrument variables would depend upon the objectives of the plan. Raising the saving-income ratio and the investment-income ratio, population policy, import substitution and export promotion, achieving a certain sectoral and regional balance in development, etc., could be some of the independent variables of the model since their values are exogenously specified by the planner.
- 3) **The functional relationship:** The dependent and instrument variables are functionally related to each other in the form of structural or behavioural equations of the model. These functional relationship are expressed in the form of coefficients.

These coefficients show the response of the dependent variables when a change in the independent variables is specified.

In a planning model, the values of the policy instruments may be independently determined and these may be functionally related to the dependent variables or the objectives so as to obtain the values of the latter.

21.7.2 Types of Planning Models

On the basis of the comprehensive or complexity of the models, the planning models can be classified in three groups: (1) Aggregative or macroeconomic models, (2) Sectoral models, and (3) Comprehensive inter-industry models.

- 1) **Aggregative or Macroeconomic Models:** In the initial stages of the process of plan formation, the planner may be interested in binding answers to some simple macroeconomic problems. In such a case, it may not be necessary to go into sectoral details. This type of model is known as macroeconomic model.

A good example of a macroeconomic plan model is the Harrod-Domar Model (You have already studied this model in detail in Block-1, Unit-2). Harrod-Domar Model was initially developed as a growth model to specify the requirements of steady growth at full employment in a developed market economy. It has come to be increasingly used as a simple aggregative macroeconomic planning model. The overall growth rate of the economy or the size of the plan can be worked out with the help of the Harrod Domar growth equation.

The model could be used to determine other plan objectives such as the level of employment or balance of payments equilibrium. The model, being macroeconomic in nature, does not go into sectoral details. This is its merit as well as a shortcoming.

- 2) **Sectoral Models:** These models are of two types: (A) single-sector project models, and (B) complete main sector models.
 - A) **Single-Sector Project Models:** In these models a single sector is separately treated as a huge project. Such separate projects are individually appraised for requirements of capital, skilled labour, foreign exchange, etc. By aggregating the requirements of individual sectors, the total resource requirements are arrived at. If the aggregate resource requirements turn out to be more than the available resources, some of the projects may be excluded from the plan. Such models are capable of producing a coordinated, internally consistent plan.
 - B) **Complete Main-sector Models:** These are a more developed form of sectoral models. These are based on differentiation of main sectors of the economy, specification of their individual growth rates and taking an explicit note of their inter-dependence. These models have to satisfy certain general conditions: (i) The model should be complete in the sense that it must cover the entire economy. (ii) The model should be realistic. (iii) The model must be internally consistent.

Besides the division of main sectors into agricultural and non-agricultural sectors, some other pairs of sectors could be consumption goods and investment goods sectors, or external and domestic market sectors. In the four-sector Mahalanobis model, the main sectors are: Capital goods sector, consumer goods sector, agriculture and household industries sector, and services sector.

- 3) **Comprehensive Inter-industry Models:** The inter-industry models make use of two important techniques of economic analysis, viz. (i) input-output technique is used for purposes of setting consistent sectoral targets and thus for ensuring the internal consistency of a plan and ii) linear programming technique is used for optimisation of an objective function like output or consumption in the terminal year of the plan, or over a plan period.

21.7.3 Factors Affecting Choice of Planning Models

Choice of planning models is determined by a number of factors. These are as follows:

- 1) **Stage of development:** If a country is dominated by subsistence agriculture, has a limited monetary sector and little or no inter-industry relations, then aggregative or sectoral models may be the preferred choice. However, in the later stages of development, inter-industry planning model may become more relevant.
- 2) **Institutional Structure:** If private sector plays a relatively passive role, then the public sector is expected to provide the initial stimulus and overall direction. So public investment projects will get greater attention. However, if private sector is more active, then the plan strategy will concentrate on the creation of

favourable conditions for private economic activity. In the case of conflict between public and private interests, the former will normally take precedence over the latter.

- 3) **Availability and Reliability of Data:** The planners may have to resort to aggregative planning model till such time when empirical information is both adequate and reliable to warrant the adoption of detailed planning model.
- 4) **Resource Constraints:** In general, non-availability of capital and foreign exchange are the principal constraints to rapid economic development. In such a situation, labour-intensive projects may have to be stressed to economise the use of limited capital and foreign exchange recourses.

21.7.4 Use of Planning Models

Planning models have been used in different contexts in actual planning.

One, planning models can be used to provide a frame for checking the consistency or optimality of plan targets.

Two, model building activity may lead to a stage where actual targets for the plans may be set with the help of computers by feeding relevant data into them and receiving back readymade plans.

Three, the planning models may provide a frame for the evaluation and selection of projects.

Four, the models provide intellectual backbone to each plan in the matter of choice of policies.

21.7.5 Criticism of Planning Models

The main drawbacks of planning models may be stated as follows:

First, the planning models do not consider non-economic factors, such as attitudes, social stratification, quality of the political leadership and civil administration as important in the process of development. These are not, therefore, taken as the instrument variables of the models. This is a serious lapse.

Secondly, there is a tendency on the part of model-builders to isolate a single factor as the critical instrument variable. Such one-factor analysis in the models may spell policy distortions.

Thirdly, planning models suffer from misplaced aggregation. Models are built in terms of national aggregates like unemployment, savings, investment, etc., as if these variables are homogeneous in character. Such an assumption is not correct and hence aggregation is wrong.

Finally, different planning models illegitimately isolate a few variables of economic policies as the critical variables in the process of planned development. The result is that some important complementary relationships may be over-looked.

Check Your Progress 3

- 1) What do you mean by planning models? State their elements.

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- 2) Distinguish between different types of planning models. Which type of planning model should be chosen and why?

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- 3) What are the uses of planning modes? Why are these models criticised?

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21.8 LET US SUM UP

Planning is defined as the making of major economic decisions by a designate authority on the basis of a comprehensive survey of the system as a whole. Planning is needed to achieve an optimum utilisation of available resources for maximisation of social welfare. The nature and scope of planning differs as between different economic systems. A planning system may totally dispense with the market mechanism, whereas another system may operate only through the market. The different variants of planning have their own relative advantages and disadvantages. The intellectual support to planning is provided by the plan models. Different types of planning models may be constructed, depending upon the objectives and the availability of resources.

21.9 KEY WORDS

Policies	: It describes the outlines of actions for the fulfilment of plan goals.
Instruments	: The qualitatively and quantitatively defined means or action by which it is intended to achieve the plan goals.
Market Friendly state	: A set of government policies and instruments that throws up greater opportunities for market mechanism to play a larger role in economic decision making.
Consumer Friendly markets.	: The market-mechanism that responds favourably to consumer's need and does not attempt to manipulate or stifle them.

21.10 SOME USEFUL BOOKS

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Chenery, Hollis B., et al (ed.) 1971 *Studies in Development Planning*, Cambridge University Press: Harvard

Lutz, vera (1969) *Central Planning for the Economy*, Longmans: London

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Dhingra, Inshwar C (2005) *The Indian Economy, Environment and Policy*, Sultan Chand: New Delhi

21.11 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

- 1) See Section 21.2
- 2) See Section 21.2.1
- 3) See Section 21.3

Check Your Progress 2

- 1) See Section 21.4
- 2) See Section 21.5.1
- 3) See Section 21.5.2
- 4) See Section 21.5.3

Check Your Progress 3

- 1) See Section 21.7.1
- 2) See Section 21.7.2
- 3) See Section 21.7.4

UNIT 22 INTERNATIONAL TRADE AND DEVELOPMENT

Structure

- 22.0 Objectives
- 22.1 Introduction
- 22.2 Trade and Development
 - 22.2.1 Static Gains from Foreign Trade
 - 22.2.2 Dynamic Gains from Foreign Trade
- 22.3 Prebisch, Singer and Myrdal Thesis
 - 22.3.1 Objections to the Thesis
 - 22.3.2 Causes of Deterioration in TOT
- 22.4 Trade strategy: Export-led Growth
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22.0 OBJECTIVES

After reading this unit you should be able to:

- Illustrate the role of international trade in economic growth;
- distinguish between static gains and dynamic gains from foreign trade;
- explain the Prebisch-Singer-Myrdal Thesis and the underlying causes of deterioration in long-term term-of-trade of developing countries;
- discuss the merits and demerits of outward-looking and inward-looking trade strategies;
- analyse the structure of balance of payments and its significance in the process of development;

- explain the role of tariffs in international trade,
- calculate the effective rate of protection,
- appreciate the circumstances in which the WTO was set up and its significance for developing economies; and
- explain the implications of globalisation for developing countries.

22.1 INTRODUCTION

Foreign trade has worked as an "engine of growth" in the past, and even in more recent times the "outward-oriented growth strategy" adopted by the Newly-Industrialising Economies of Asia, including South Korea, Taiwan, Singapur, and Hong Kong, has enabled them to overcome the constraints of small resource-poor under-developed economies. Notwithstanding a strong belief in Prebisch, Singer and Myrdal thesis at some point of time in the history of international economic relations, the free trade paradigm in the current WTO administered era has thrown open innumerable opportunities for growth. Increasing spread of globalisation translated into larger movement of goods and services across the nations. Trade is intertwined with another element of globalisation: the spread of international production networks. Growth of trade is firmly buttressed by international institutions of long standing. The WTO, built on the legacy of the GATT, aims to create a commercial environment more conducive to multilateral exchange of goods and services. Recent years have seen substantial reductions in trade policy and other barriers inhibiting developing country participation in world trade. Lower barriers have contributed to a dramatic shift in the pattern of developing country trade - away from dependence on commodity exports to much greater reliance on manufactures and services. In addition, exports to other developing countries have become much more important.

We address all these issues in this unit.

22.2 TRADE AND DEVELOPMENT

The role of foreign trade in fostering economic development can be examined under two headings: (i) static gains from foreign trade, and (ii) dynamic gains from foreign trade.

22.2.1 Static Gains From Foreign Trade

The static gains from foreign trade can be briefly stated as follows.

If there is a difference between internal relative prices in autarky and those that can be obtained internationally, then a country can improve its well-being by specialising in and exporting the relatively less expensive domestic goods and importing goods that are relatively more expensive.

From a development standpoint, the change in economic structure and factoral distribution of income that is assumed to accompany this adjustment is of clear concern. Because the economic systems of the developing countries tend to be somewhat unresponsive to changing price incentives, at least in the short run, factors of production may not move easily to the expanding low-cost sectors from the contracting higher-cost sectors. In this case the adjustment process takes on the characteristics of the "specific-factors model" and the gains from specialisation are reduced in the short-run.

Nevertheless, even if a country's production does not change at all, there are still gains from trade as follows:

- 1) The characteristics of the import good - either in terms of quality for consumers or productivity in the case of capital and intermediate inputs - may

improve the economy's ability to meet consumer needs. Imports may also help relieve short-run domestic bottleneck and permit the economy to operate closer to its production-possibilities-frontier - that is to say, more efficiently - on a consistent basis.

- 2) The static impact of trade on the production structure of the economy that occurs when specialisation follows comparative advantage will result in a relative expansion of the sector(s) using the relatively abundant factor. For most developing countries, this results in incentives to expand labour-intensive production instead of more capital-intensive production. This means expanding traditional agriculture, primary goods, and labour-intensive manufactures. International trade thus stimulates employment and puts upward pressure on wages, as suggested in *Heckscher - Ohlin explanation* of the basis for trade.
- 3) Since most of the developing countries are far removed from full employment situation, another potential gain from foreign trade has been elaborated by Hla Myint. Myint suggests that unemployment represents a potential production supply that exceeds domestic demand in the developing country. In this instance, foreign trade can provide a 'vent for surplus', that is, a large market that will permit the country to increase its output and employment (conceptually, to move from well inside its production-possibilities-frontier to a point near or perhaps on the PPF). Myint argues that vent for surplus is a more convincing explanation of *why* countries start to trade, while comparative advantage helps us to understand the *types* of commodities countries ultimately trade. From a development standpoint, the gains in income, employment, and needed import goods can influence the development process in a positive manner.

However, these gains from trade are limited by a number of factors; among these the more important are as follows:

One, given the economic characteristics of many primary goods and labour-intensive manufactures, many observers question the desirability of a relative growth in the production of traditional goods, particularly if this growth is at the expense of modern manufacturing. Because of the lower income, low price elasticities of demand for these products and the instability in supply of agricultural and primary production, greater specialisation in these goods can result in a greater instability of income, even in the static sense.

Two, to the extent that the developing country is a large country in terms of export goods, supply may well lead to undesired terms-of-trade effects that will significantly reduce the expected static gains from trade and lead to a distribution of the gains from trade that favours the more developed trading partner.

Three, expanding production of basic labour-intensive products and relying on the industrialised countries for manufactures and capital goods not only can lead to a critical economic dependency but also inextricably links the economic health of the developing country to that of the industrialised country.

Four, to the extent that developing countries are characterised by high rates of unemployment, the impact of increased demand for labour on the wage level is often limited.

To sum up, the static gains from trade for a developing economy originate from the traditional gains from exchange and specialisation as well as, perhaps from a vent for surplus. However, because of the inflexibilities in the traditional economies and the nature of the traditional labour-intensive exports, the relative static gains from trade may be less than those for the more flexible industrial economy and also may be reduced by the undesirable effects of increased economic instability and terms-of-trade behaviour.

22.2.2 Dynamic Gains from Foreign Trade

The biggest potential impact of trade on development rests with dynamic effects. Dynamic effects may be both positive and negative.

A) **Dynamic Positive Effects:** The principal positive effects may be stated as follows:

- i) The expansion of output brought about by access to the larger international markets permits the developing countries to take advantage of economies of scale that would not be possible with the limited domestic market. Thus, industries that are not internationally competitive in an isolated market may well be competitive by way of international trade through expansion of market.
- ii) Since comparative advantages change over time and with economic development, international trade can foster the development of infant industries into internationally competitive ones by providing the market size and exposure to products and processes that would not happen in its absence. This of course is one of the reasons cited for using trade policy instruments to restrict imports or promote exports, although these are problems with using the policies in practice.
- iii) Other dynamic influences of trade on economic development arise from the increased investment resulting from changes in the economic environment, the increased dissemination of technology into the developing country, exposure to new and different products, and changes in institutions that accompany the increased exposure to different countries, cultures and products.

B) **Dynamic Negative Effects:** As conditions in the developing countries differ so dramatically from the theoretical models, the static application or comparative advantage may not be very helpful in providing guidelines for trade and specialisation in a dynamic developing economy setting. It is important to examine briefly several of the more important disadvantages of unrestricted trade for the developing country, particularly since these concerns can have important implications for trade policy.

- i) The possible negative effects of trade on development arise from factors that are ignored when focussing on static comparative advantage to delineate factors and imports. For example, market imperfections in developing countries generally result in private costs and benefits being different from social costs and benefits. Relying on private (market) prices in this environment can lead to a pattern of trade that is not consistent with either relative social costs or long-term development goals of the country.
- ii) In a broader dynamic context, it must also be recognised that since the production linkages vary between different commodities or sectors, the overall effect of exports on growth and is likely to vary from commodity to commodity. Some commodities thus act like "growth poles" for the entire economy while others such as primary production have little effect outside their own sector.
- iii) A further complication arises from the variation in the returns to scale characteristic among commodities. Thus, a country might not appear to have a relative cost advantage in a particular product at the level of production needed to fill the home market, but there might well be a comparative advantage in that product at a higher level of production. In

a similar fashion, a product that appears to have a current cost advantage but is characterised by decreasing returns to scale may find its export possibilities very limited.

- iv) From an internal perspective, the domestic supply and demand conditions that underlie both current and future comparative advantage have been and will continue to be influenced both by the imperfect nature of the markets and by government policy.
- v) The operation of markets and the characteristics of traded goods often differ between the developing countries and the industrialized countries. Many argue that these differences result in the greater share of trade related benefits going to the industrialised countries and may even contribute to the furthering of underdevelopment in the developing economies.

To sum up, while empirical analysis often supports the idea of a positive connection between the expansion of international trade and growth in income, a certain ambiguity remains. The manner and the degree to which trade influences growth and development is complex and often country-specific. The nature of the effect appears to vary with the degree of development, the nature of the economic system, and world market. World business cycles in particular seem to play an important role. While empirical analysis has not as yet provided a conclusive answer to the links between trade and growth, some of the recent models of growth through endogenous technological change that incorporate various effects of international trade might prove more successful.

22.3 PREBISCH, SINGER AND MYRDAL THESIS

Prebisch-Singer-Myrdal Thesis states that the terms of trade of the developing countries have declined over a long period of time, much to their disadvantage. The thesis is so named after the names of the three economists who popularized it, viz., Raul Prebisch, Hans W. Singer and Gunnar Myrdal.

The problem of long-run deterioration in the terms of trade refers to the fact that, over the span of several decades or so, there has been a persistent tendency for the commodity terms of trade (price of exports/price of imports) to fall for developing countries. If the world is viewed as consisting of two groups of countries - the developing countries (DCs) and the industrialized countries (ICs) - then the implication is that the commodity terms of trade have been improving for ICs, since exports from DCs(ICs) are imports into ICs(DCs). In other words, the international economy is transferring real income from DCs to ICs.

The thesis emerged in response to statistical studies showing that, particularly for Great Britain, the TOT had risen dramatically in the 50-to-100-year period ending with World War II. The inference was made that since the IC's TOT had improved, the DC's TOT must have deteriorated.

22.3.1 Objections to the Thesis

A number of economists pointed out that such an inference was invalid for the following reasons:

- i) One reason concerns the way international trade are recorded. Exports are usually recorded f.o.b.(free on board) which means that insurance and transportation costs are not included; however, imports are usually recorded c.i.f.(inclusive of cost, insurance and freight). Hence $P_{\text{exports}}/P_{\text{imports}}$ for the ICs could have been rising because as has been the case over the long run, transport costs had been falling. Thus, the use of the reciprocal of the IC's

TOT as an indication of the DC's TOT is invalid, since the recording procedure could be consistent with improving TOT for both DCs and ICs due to the decline in transportation costs.

- ii) Another reason for objection to long-run studies of TOT behaviour concerns quality changes in products. It is very difficult to incorporate quality changes into price indexes, and a rise in price for a product may not indicate a true price increase if the quality of the product purchased has also improved. Quality improvement have been greater in manufactured goods than in primary products in the long-run. Thus, since the share of primary products in DCs exports is larger than in DCs imports, even if $P_{\text{exports}}/P_{\text{imports}}$ is falling for the DCs this may not be a true 'deterioration' in TOT. While the DCs may be paying relatively more for their imports, they may also be receiving relatively better products.

Despite these objections, there is considerable concern over the trend of TOT for DCs.

22.3.2 Causes of Deterioration in TOT

Several reasons have been offered for the long-run TOT decline of DCs.

1) Differing elasticities of demand for primary products and manufactured goods

Empirical evidence indicates that the income elasticity of demand is higher for manufactured products than for primary products. Consequently as DCs and ICs both grow, they devote a larger percentage of their incomes to the purchase of manufactured goods and smaller percentage on primary products. Since many DCs are net exporter of primary products and net importer of manufacturers, the prices of their imports will rise more rapidly than the prices of their exports, other things being equal.

2) Unequal market power in product and factor markets in ICs and DCs

The general point is that primary products are sold in competitive world markets, while manufactured goods are often sold in an oligopolistic market setting where prices can be higher than would be the case with perfect competition. In addition, labour markets in ICs may contain imperfectly competitive elements if labour unions are strong and thus wages are relatively high, while labour in the primary-product sector in DCs is not organized and cannot exert upward pressure on wages and prices. The result is that prices of primary products do not have the upward pressures put upon them that prices of manufactured goods do; therefore, the TOT of the DCs suffer. There may also be an asymmetry in price behaviour; primary-product prices may be slow to rise in the upswing of business cycles but fall in downswings, while manufactured goods prices rise in upswings and are slow to fall in downswings. Over the long run, DC's TOT decline.

3) Technical change

The nature of technical change has worked to reduce the growth rate of demand for primary products. Those reduction in the growth of demand has therefore, other things being equal, resulted in less upward pressure on primary-product prices.

4) Multinational Corporations and Transfer Pricing

The behaviour of MNCs through the mechanism of transfer pricing can worsen the DCs TOT. Suppose that a MNC operates a subsidiary in a DC that is sending inputs to another subsidiary in an IC and at the same time the subsidiary in the IC sending inputs to DC subsidiary. Since both subsidiaries are part of the same enterprise, such trade is called intra-firm trade. In intra-firm trade, prices are largely arbitrary because

the goods do not pass through organized markets, and the recorded prices are merely bookkeeping entries for the firm.

Check Your Progress 1

- 1) Examine the nature of static gains from foreign trade.

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- 2) Examine the nature of dynamic gains from foreign trade.

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- 3) What do you mean by terms of trade? Account for the long-term deterioration of terms of trade for developing countries.

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22.4 TRADE STRATEGY : EXPORT-LED GROWTH

What is the appropriate trade strategy for DCs. Economists and policy-makers have debated two competing strategies regarding the trade sector: (i) inward-looking strategy, and (ii) outward looking strategy.

An inward-looking strategy is an attempt to withdraw, at least in the short-run, from full participation in the world economy. This strategy emphasise import substitution, that is, the production of goods at home that would otherwise be imported. This can economise on scarce foreign exchange and ultimately generate new manufactured exports if economies of scale are important in the import-substitution industries and if the infant industry argument applies. The strategy uses tariffs, import quotas, subsidies to import-substitute industries, and other measures of this type.

An outward-looking strategy emphasizes participation in international trade by encouraging the allocation of resources without price distortions. It does not use policy measures to shift production arbitrarily between serving the home market and foreign markets. In other words, it is an application of production according to comparative advantage.

Some analysts go further and focus particularly on *export promotion*, whereby policy steps such as export subsidies, encouragement of skill accumulation in the labour force and the use of more advanced technology, and tax breaks are used to generate more exports, particularly labour-intensive manufactured exports in accordance with the Heckscher-Ohlin Theorem.

22.4.1 Arguments for Inward-looking Strategy

The advocates of inward-looking strategy plead that inward-looking policies encourage indigenous talent, learning to do things by oneself, domestic technological development and suitable range of products, avoiding the ill-effects of demonstration from the outside world. Given gaps of development between the developing and the developed countries, inward-looking strategy is advocated as an inevitable one.

22.4.2 Arguments for Outward-looking Strategy

The advocates of outward-looking strategy argue that openness is useful to bring about good educational effects, new ideas and new techniques, growth of new forms of organization, etc. They believe that free trading encourages learning by trade and implies achievements of dynamic transformation of the economy into higher standards of living. Free trade is a win-win situation, all the trading partners stand to gain through productivity improvements, notwithstanding diversities in their domestic institutions and policies.

Quotas and other quantitative restrictions, on the other hand, interfere with price mechanism, involve allocative and X-inefficiencies, create distortions and impede the progress of competitive and industries.

Effects of these two types of strategies on growth of output, employment, income generation and income inequalities could also be of diverse nature, and no general inference can be drawn in this context.

22.5 DUAL-GAP ANALYSIS

A two-gap analysis of capital requirements for economic growth has been put forth by Hollis Chenery and Michael Bruno. This “two-gap” approach to economic development argues that “saving gap” and “foreign exchange gap” are two separate and independent constraints on the achievement of a target rate of growth in DCs. According to this analysis, foreign capital fills both the gaps and helps to attain the target rate of growth.

The size of gaps can be calculated by assuming a target growth rate and a given capital-output ratio. To illustrate, if the target growth rate is 8 per cent per annum, and the capital-output ratio is 4:1, then the country must save 32 per cent of its national income to attain the growth target. But if the domestic rate of saving is 28

per cent, the saving gap is 4 per cent of national income. This gap can be filled by foreign capital. Similarly, a fixed relationship is envisaged between targeted foreign exchange requirements and net export earnings to find out the foreign exchange gap which can be covered by foreign capital inflow.

The two gaps can be explained in terms of the national income accounting identities as follows:

$$E - Y \equiv I - S = M - X = F$$

where

E is national expenditure

Y is national income

S is saving

M is imports

X is exports

F is net capital inflow

(I – S) represents the domestic saving gap and (M – X) is the foreign exchange gap. It may be mentioned here that the two gaps are always equal in the ex-post sense in any given accounting period but they may differ ex-ante like the basic national income identities. The reason in this case being that in the long run those who make decisions about savings, investment, exports and imports are different people.

The dual-gap analysis is based on the following assumptions:

- Savings and foreign exchange cannot be substituted for each other.
- The potential savings of a country cannot be transformed into exports.
- Export promotion and import substitution policies are ruled out.
- There are certain structural rigidities and non-substitutability between different types of goods.

On the basis of these assumptions, the ex-ante gaps with different growth rates of income can be explained with the help of Fig. 22.1.

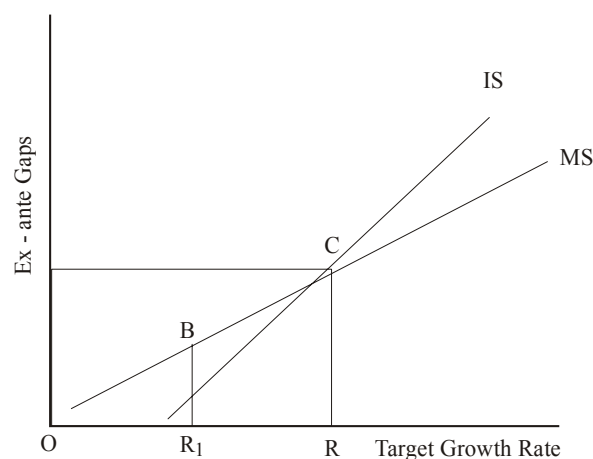


Fig 22.1: Dual Gap Analysis

In Fig. 22.1, target growth rates are measured on the x-axis; y-axis measures ex-ante gaps. (I – S) curve shows the saving gap and (M – X) curve represents the foreign exchange gap.

At point C, both the gaps are equal and the target growth rate achieved is OR with OC inflow of foreign capital.

In case the targeted growth rate is OR_1 , the foreign exchange gap is larger than the savings gap by AB. As a result, this growth rate will not be achieved as the inflow of foreign capital is not adequate to fill the larger foreign exchange gap OG_1 .

If the target growth rate is OR_2 , the saving gap is larger than the foreign exchange gap by ED. This growth rate cannot be achieved because the inflow of foreign capital is insufficient to inflow of foreign capital to meet the larger saving gap OF_2 . It is not possible to curtail imports due to “The nature and limited flexibility of the productive system and of the composition of consumer demand”. Chenery, however, suggests changes in the exchange rate and restrictions of the pattern of consumption and distribution of income to remove these structural rigidities. Such measures may succeed in bringing about adjustments in the two-gaps without foreign capital but they will hinder growth.

The foreign capital needed to fill the gap is determined by the dominant gap at a given point in time.

- 1) If the saving gap is larger than the foreign exchange gap, the country is said to be in a savings constraint. In this case, over the long run the amount of foreign capital required will equal the gap between the increase in investment and the increase in savings generated by rising income. When the savings gap ceases to exist, the target growth rate will be ensured.
- 2) If the foreign exchange gap is larger than the savings gap, the country is said to be in a foreign exchange constraint. The inflow of capital can help overcome the foreign exchange gap and over the long period the required foreign capital will equal the difference between the increase in imports and exports and the target growth rate of economy will be ensured.
- 3) The model postulates stable values of the parameters for the future. This is unrealistic as the marginal savings rate and capital-output ratio change over time.
- 4) The model treats all types of capital investments as homogeneous. This is unrealistic because the capital requirements of developing countries pertain to different sectors, projects and industries.
- 5) Apart from the saving gap and foreign exchange gap, the developing countries also suffer from other equally important gaps in technology and infrastructure.

To sum up, dual-gap analysis may have some limited utility in the calculation of short-run capital requirements but over the longer run it is not of much use.

22.6 BALANCE OF PAYMENTS

The principal tool for the analysis of the monetary aspects of international trade is the balance of payments settlement.

22.6.1 Concept and Uses

Balance of payments (BOP), is a systematic record of all international economic transactions, visible and invisible, of a country during a given period usually a year. In other words, the statement is a device for recording all the economic transactions within a given period between the residents of a country and the residents of other countries. The BOP of a country, technically speaking, always ‘**balances**’. Such equality in the debit and credit sides of the BOP, known as equilibrium, has no economic significance. It simply results from the double entry book-keeping procedure which is used to record the transactions.

The analysis of the BOP can be done in terms of its two major sub-divisions, viz., (A) i) Current account, and (ii) Capital account.

- A) **Current Account:** The current account can be broken in to two parts, viz. **one**, balance of trade, and **two**, balance of invisibles.

The **balance of trade (BOT)** deals only with exports and imports of merchandise (or visible items).

The **balance of invisibles (BOI)** shows the net receipts on account of invisibles. These include the remittances, net service payments, etc.

It is not necessary that BOT should always balance; more often than not it will show either a surplus or a deficit. Similarly, the BOI will always show either a surplus or a deficit. A surplus on BOT may be matched with a surplus or deficit on BOI. If the surplus on BOI equals the deficit on BOT, the current account will show a net balance. But then there is no reason why these two balances should always be equal, again, always in opposite directions. As a matter of fact, the balance on current account can always show a deficit or a surplus. A surplus on current account leads to an acquisition of assets or repayment of debts previously contracted, and a deficit involves withdrawal of previously accumulated assets or is met by borrowings.

- B) **Capital Account:** The capital account presents transfers of money and other capital items and changes in country's foreign assets and liabilities resulting from the transactions recorded in the current account. The deficit on the current account and on account of capital transactions can be financed by external assistance (loans and grants), borrowings from the International Monetary Fund and allocation of the Special Drawing Rights.

Uses: The BOP account provide a link between the increase in gross external debt and the portfolio and spending decisions of the economy.

$$\begin{array}{rcl}
 \text{Thus, increase in gross external debt} & = & \text{Current account deficit} \\
 & - & \text{direct and long-term portfolio capital changes} \\
 & + & \text{increases in official reserve} \\
 & + & \text{other private capital outflows}
 \end{array}$$

The above equation shows that an increase in external debt can have three broad sources: i) current account deficits not financed by long-term capital inflows, ii) borrowing to finance a reserve build-up, and iii) private outflows of capital.

22.6.2 BOP and Developing Economies

It is well-known in development economics that developing economies invariably start as debtor economies. In the process of development itself these economies have to import a great deal of capital goods, consumer goods, food and raw materials, and spares and components. They also have to import some new technologies and hence, the total exchange outgo cannot be matched by export earnings. But it is expected that soon, as the new capital goods and technologies begin to become effective and their products are directed towards exports, export goods and services become competitive in cost and quality. In that case, the volume of exports expands and, in due course, begins to overtake exports. A developing economy then moves on from being a debtor country to a balanced one in terms of BOP and, finally, becomes a creditor country exporting more than it imports and giving credit to buyers. Thus, from being a net debtor in the beginning, it becomes a net creditor in the end and, in fact, begins to invest abroad rather than have others bending to and investing in it.

22.7 TARIFFS AND EFFECTIVE PROTECTION

More generally, governments do not adhere to free trade despite the strong case for the efficiency and welfare gains from trade that has been clearly established and accepted. Policymakers have proven very resourceful in generating different devices for restricting the free flow of goods and services. Among these, the most important are import tariffs.

Tariffs, generally speaking, are of two types: (i) specific tariff, and (ii) *ad valorem* tariff

A *specific tariff* is an import duty that assigns a fixed monetary (rupees) tax per physical unit of the good imported. Thus, a specific duty might be Rs.25 per ton imported or Rs.2 per kg. The total import tax bill is levied in accordance with the number of units coming into the importing country and not according to the price or value of the imports. Tax authorities can collect specific tariffs with ease because they need to know only the physical quantity of imports coming into the country, not their monetary value. However, specific tariff has a fundamental disadvantage as an instrument of protection for domestic producers because its protective value varies inversely with the price of the import.

The *ad valorem* tariff is levied as a constant percentage of the monetary value of 1 unit of the imported good. Thus, if the *ad valorem* tariff is 10 per cent, an imported good with a world price of Rs.100 will have Rs.10 tax added as the import duty. If the price rises to Rs.200 because of inflation, the import levy rises to Rs.20.

Although the *ad valorem* tariff preserves the protective value of the trade interference for home producers as prices increase, there are difficulties with this tariff instrument because customs inspectors need to make a judgment on the monetary value of the imported good. Knowing this fact, the seller of the good is tempted to under-value the good's price on invoices in order to reduce the tax burden. On the other hand, customs officials may deliberately overvalue a good to counteract undervaluation or to increase the level of protection and tariff revenue. Nevertheless, *ad valorem* tariffs have come into widespread use.

22.7.1 Effective Tariff Rate

An issue relating to tariffs concerns the choice of the appropriate tariff rate when evaluating the impact of tariffs. The issue involves the distinction between the *nominal tariff rate* on a good and the *effective tariff rate*, more commonly known as the *effective rate of protection* (ERP).

The nominal rate is simply the rate listing in a country's tariff schedule, whether it is an *ad valorem* tariff or a specific tariff that can be converted to an *ad valorem* equivalent by dividing the specific tariff amount per unit by the price of the good.

The ERP is defined as the percentage change in the value added in an industry because of the imposition of a tariff structure by the country rather than the existence of free trade. When using the ERP we are concerned about the extent to which "value added" in the domestic import-competing industry is altered by the existence of the whole tariff structure.

The ERP can be illustrated with a numerical example.

Consider a situation in which good F is the final good and goods A and B are intermediate inputs used in making F. Assume that A and B are the only intermediate inputs and that 1 unit each of A and B is used in producing 1 unit of the final good F. Intermediate goods A and B can be either imported or produced in their country but compete with imports and thus have their prices

influenced by the tariffs on the competing imports. Suppose that, under free trade, the price of the final good (P_F) is Rs.1,000 and the prices of the inputs are $P_A = \text{Rs.}500$ and $P_B = \text{Rs.}200$. In this free trade situation, the value added is $\text{Rs.}1,000 - (\text{Rs.}500 + \text{Rs.}200) = \text{Rs.}1000 - \text{Rs.}700 = \text{Rs.}300$.

Now consider a situation where protective tariffs exist: a prime mark next to a price (P') indicates a tariff-protected price. Suppose that the tariff rate (t_F) on the final good is 10 per cent and that the tariff on input A (t_A) is 5 per cent and on input B (t_B) it is 8 per cent. If we assume that the country is a small country then the domestic prices of the goods with the tariffs in place are

$$P'_F = \text{Rs.}1000 + 0.10 (\text{Rs.}1000) = \text{Rs.}1000 + \text{Rs.}100 = \text{Rs.}1100$$

$$P'_A = \text{Rs.}500 + 0.05 (\text{Rs.}500) = \text{Rs.}500 + \text{Rs.}25 = \text{Rs.}525$$

$$P'_B = \text{Rs.}200 + 0.08 (\text{Rs.}200) = \text{Rs.}200 + \text{Rs.}16 = \text{Rs.}216$$

The value added in industry F under protection is $\text{Rs.}1,100 - (\text{Rs.}525 + \text{Rs.}216) = \text{Rs.}1,100 - \text{Rs.}741 = \text{Rs.}359$. The industry has experienced an increase in its value added because of the tariffs, and therefore the factors of production working in industry F are able to receive higher returns than under free trade. There is thus an economic incentive for factors of production in other industries to move into industry F. Since the effective rate of protection is the percent change in the value added when moving from free trade to protection, the ERP in this example is

$$\frac{\text{Value added under protection} - \text{Value added with free trade}}{\text{Value added with free trade}}$$

$$= \frac{VA' - VA}{VA} = \frac{\text{Rs.}359 - \text{Rs.}300}{\text{Rs.}300}$$

$$= 0.197, \text{ or } 19.7\%$$

Thus, the factors of production in industry F have benefited from the tariffs, although consumers have lost. A more common formula for calculating the ERP for any industry j utilizing inputs designated as i is

$$ERP_j = \frac{t_j - \sum_i a_{ij} t_i}{1 - \sum_i a_{ij}}$$

Where a_{ij} represents the free-trade value of input i as a percentage of the free-trade value of the final good j , t_j and t_i represent the tariff rates on the final good and on any input i , respectively, and $\sum_i$ means that we are summing over all the inputs. In the example, the a_{ij} for input A is $\text{Rs.}500/\text{Rs.}1000$ or 0.50, and the value of the a_{ij} for input B is $\text{Rs.}200/\text{Rs.}1000$ or 0.20.

This method of calculating the ERP has the advantage of illustrating three general rules about the relationship between nominal rates and effective rates of protection. These rules are as follows:

- 1) If the nominal tariff rate on the final good is higher than the weighted-average nominal tariff rate on the inputs, then the ERP will be higher than the nominal rate on the final good.
- 2) If the nominal tariff rate on the final good is lower than the weighted-average nominal tariff rate on the inputs, then the ERP will be lower than the nominal rate on the final good.

- 3) If the nominal tariff rate on the final good is equal to the weighted average nominal tariff rate on the inputs, then the ERP will be equal to the nominal rate on the final good.

Overall, the nominal tariff rate is useful for assessing the price impact of tariffs on consumers. For producers, however, the effective rate is more useful because factors tend to flow toward industries with relatively higher ERPs. In the assessment of development prospects and economic planning in the developing countries, a strong case can be made for ERPs as analytical tools, even more so than nominal rates of protection.

Check Your Progress 2

- 1) State in brief Prebisch-Singer Thesis. Also account for long-term deterioration in terms of the trade.

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- 2) Argue for and against inward-looking trade strategy.

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- 3) Distinguish between balance of trade and balance of payments. Also distinguish between current account and capital account of balance of payments.

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- 4) What do you mean by effective rate of protection? How is it calculated?

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22.8 POST-GATT INTERNATIONAL ECONOMIC ORDER AND WTO

As has often been pointed out, the one issue on which economists are in almost unanimous agreement is the social gains to be made by specializing and trading on the basis of comparative advantage and, correspondingly, opposition to protection. In spite of this view, the world continues to experience continual pressures to restrict the movement of goods, services, and factors between countries. Indeed, countries seem to continue to find new and novel ways to restrict these activities. Efforts nevertheless have been made to bring nations together and reach multi-lateral agreements that have a bearing on the movement of goods, services and factors.

22.8.1 Setting up of the GATT

Originally, as a part of the multi-lateral initiatives, the International Trade Organisation was proposed to be set up along with the World Bank and the IMF on the recommendations of the Bretton Woods Conference, 1944. But as the ITO could not be set up, the US, UK and a few other countries set up in 1947 an interim organization about trade named GATT (General Agreement on Tariffs and Trade)

The GATT was biased in favour of developed countries and was called informally as the “rich nations’ club”. The developing countries insisted on setting up of the ITO; the move came to be opposed by the USA. To solve the issue the UN appointed a committee in 1963; the committee recommended as a possible alternative a via media, UNCTAD (United Nations Conference on Trade and Development). The UNCTAD was set up in 1964. The UNCTAD could manage to get some concession for the developing countries, more important among which was the GSTP (General Scheme for Trade Preferences). The GATT was also made progressively more liberal.

22.8.2 Establishment of the WTO

The Uruguay Round of the GATT sought to expand the scope of the organization by including services, investment and intellectual property rights. The Uruguay Round proposals were accepted by all the members of the GATT.

The Uruguay Round agreement provided for the setting up of the WTO. The WTO started functioning from January 1, 1995.

Objectives: The agreement reiterates the following objectives of GATT:

- Raising standards of living and incomes, ensuring full employment, expanding production and trade, and optimal use of world’s resources, at the same time extending the objectives to services and making them more precise.
- Introduces the idea of sustainable development in relation to the optimal use of world’s resources, and the need to protect and preserve the environment in a manner consistent with the various levels of national economic development.
- Recognises the need for positive efforts designed to ensure that developing countries, especially the least developed ones, secure a better share of growth in international trade.

The WTO is a forum where countries continuously negotiate the exchange of trade concessions to trade restrictions all over the world. The WTO already has a substantial agenda for further negotiations in many areas, notably certain services sector.

22.8.3 WTO and Developing Countries

An effective WTO can serve the interests of developing countries in many ways:

- 1) It facilitates trade reforms.
- 2) It provides a mechanism for setting disputes.
- 3) It strengthens the credibility of trade reforms.
- 4) It promotes transparent trade regimes that lower transactions costs.

WTO is likely to generate global income gains up to \$200 billion a year, with somewhere between a third and a half of the gains going to developing countries, particularly to the ones that have reduced their own protection and locked in the benefits of earlier reforms.

However, there are critics too. Many believe WTO will bring in destruction of biodiversity and people's livelihoods by encouraging over-exploitation of natural resources, creating pollution through increasing transportation, habitat loss by infrastructure development, and so on. This it will do by forcing countries to:

- relax export rules that to date prohibit or restrict the exploitation of forests, fisheries and minerals,
- encourage export policies that spread monoculture,
- relax import rules that control the un-hindered dumping of all kinds of products, including polluting and hazardous wastes,
- accept intellectual property regimes,
- accept with few conditionalities, investment in several sectors by foreign firms and industrialists, with little regard for its ecological and social impacts.

22.9 GLOBALISATION AND DEVELOPING COUNTRIES

Globalisation, according to the Chambers 20th Century Dictionary, means "to make global, that is worldwide, or effecting or taking into consideration the whole world or all people". It has become a buzzword not only for India but across the world.

22.9.1 Implications of Globalisation

Globalisation in its totality implies the following:

- 1) There is a spread of international trade.
- 2) People migrate from one country or region to another, temporarily or permanently.
- 3) Money or means of payment are exchanged on an increasing scale between countries or regions.
- 4) Capital flows from one country to another to help produce goods and services.
- 5) Finance-not necessarily linked to the production of goods and services – flows between different countries.
- 6) Traditional corporations arise which increasingly engage in the activities listed so far.
- 7) Technology is traded as between different countries. Increasingly, with the spread of the patent regimes governed by the WTO, frontier technologies take an increasingly proprietary form.
- 8) Spread of print and electronic media.

- 9) Growth in trade and production of services of all kinds – shipping, insurance, banking, health care and, of course, finance.

In brief, globalization implies: being able to manufacture in the most cost-effective way possible anywhere in the world; being able to procure raw materials and drawing management resources from the cheapest source anywhere in the world; having the entire world as a single market.

22.9.2 Advantage of Globalisation

Supporters of globalisation argue along the following lines.

One, globalisation helps remove X-inefficiency. In the absence of globalization, prolonged protection of domestic industry has serious distortionary effects on cost structures. Exposure to competition acts as “bracing cold shower”.

Two, globalisation helps improve the allocative efficiency of resources, reduce the capital output ratio and increase the labour productivity, help to develop the export spheres and the export culture, increase the inflow of capital and updated technology into the country, increase the degree of competition in the domestic economy, reduce the relative prices of industrial and manufactured goods, improve the terms of trade in agriculture and, in general, give a boost to the average growth rate of the economy in the years to come.

Three, globalisation helps to restructure the production and trade pattern in a capital-scarce labour abundant economy in favour of labour-intensive goods and labour-intensive techniques.

Four, with the entry of foreign competition and the removal of import tariff barriers, domestic industry will be subject to price-reducing and quality-improving effects in the domestic economy.

Five, with the entry of foreign capital, the aggregate gross and net investment proportions to GDP will go up, and with a reduced capital output ratio the growth rate will go up.

Six, efficiency of banking and financial sectors will increase with the opening up of these areas to foreign capital and foreign banks.

22.9.3 Disadvantages of Globalisation

On the flip side, globalisation has its fit-falls also.

One, the speed at which capital moves across borders, the rapid evolution of management and marketing requirements, increase the pressure for structural and conceptual restructuring to a breaking point. This is multiplying the human and social costs of the globalisation process to a level that tests the social fabric of the democracies in an unprecedented way.

Two, globalisation process is in essence a tremendous redistribution of economic power at the world level which will increasingly translate into a redistribution of political power.

Three, in the globalisation economies of the world are ironically moving away from one another more than coming together. This change is bound to have a profound destabilising effect.

Four, globalisation process challenges some familiar assumptions. Until now, for instance, it was conventional wisdom that technological change and increases in

productivity would translate into higher wages. But in the last few years, technological changes have eliminated more firms than they have created.

In short, globalisation is not a free lunch. A developing economy will have to prepare itself for globalisation; for this well-coordinated initiatives need be taken in the different sectors of the economy.

In the rapidly globalising world, international trade, based on comparative advantages among nations, is set to emerge as the most critical determinant of economic development. A whole set of multilateral negotiations have been set up in motion; these aim to provide a perfectly free trade environment so that goods, services and capital may move across the globe without any restrictions and constraints. The World Trade Organisation has emerged as the standard-bearer.

Check Your Progress 3

1) Why did the WTO come to be established? What are its objectives?

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2) What do you mean by globalisation? What are its implications?

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3) State the advantages and shortcomings of globalisation?

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22.10 LET US SUM UP

This unit discussed the implications for, and the effects of, the international economy on the developing nations. The role of international trade in economic growth was explained. The unit then went on to discuss the gains from trade, including static gains and dynamic gains from foreign trade. The unit then explained the Prebisch-Singer-Myrdal Thesis and the underlying causes of deterioration in long-term-of-trade of developing countries. The merits and demerits outward-looking and inward-looking trade strategies were discussed. The unit then analysed the structure of balance of payments and its significance in the process of development. The role of tariffs in international trade was discussed, and how the effective rate of protection is calculated was explained. The circumstances in which the WTO was set up were described and its significance for developing economies was discussed. Finally the implications of globalisation for developing countries were discussed.

22.11 KEY WORDS

Absolute advantage	:	It occurs when a nation can produce a commodity at a lower cost than the other nation.
Capital Intensive Goods	:	The proportion of capital is higher than the other factors of production in the production of these goods.
Factor Endowment	:	It refers to the units of labour required to produce one unit of output.
Labour Coefficient	:	It refers to the units of labour required to produce one unit of output.
Labour-Intensive Goods	:	The proportion of labour is higher than the other factors of production in the production and these.
World Terms of Trade	:	These terms refer to the exchange ration in the world economy when there is free trade.

22.12 SOME USEFUL BOOKS

Kenner, Peter B. (1994) *The International Economy* (3rd edn.) Cambridge University Press: Cambridge

Krugman, Paul and Maurice Obstfeld (2003) *International Economics: Theory and Policy* (6th edn.), Pearson Education, Singapore

Meier, Gerald M. and James E. Rauch (2000), *Leading Issues in Economic Development*, (7th edn.) Oxford University Press: New York and London

Ray, Debraj (1998) *Development Economics*, Oxford University Press: New Delhi

22.13 ANSWERS/HINTS TO CHECK YOUR PROGRESS

1) Check Your Progress 1

- 1) See Sub-section 22.2.1
- 2) See Sub-section 22.2.2
- 3) See Sub-section 22.2.3

2) Check Your Progress 2

- 1) See Section 22.3
- 2) See Sub-section 22.4.1
- 3) See Section 22.6
- 4) See Sub-section 22.7.1

3) Check Your Progress 3

- 1) See Sub-section 22.8.1
- 2) See Sub-section 22.9.1
- 3) See Sub-sections 22.9.2 and 22.9.3