CHAPTER II

PUBLIC EXPENDITURE AND COST BENEFIT ANALYSIS:

AN OVERVIEW

Role of Public Expenditure in the National Economy:

All the old tenets held by classicals and neo-classicals that 'all public expenditure beyond what is absolutely necessary for the preservation of social order and for protection against foreign attack was a waste' is repudiated by modern economists. Since the Keynesian revolution, we find a change in the direction of the economic policy altogether. In his analysis, public expenditure assumed tremendous importance as a counter-cyclical device to maintain stability and promote increased employment opportunities. Since then we find that the scope for systematic study in the field of public expenditure has been widening. Since the sixties, sufficient discussions on the 'Theory of Public Expenditure' have been initiated by leading economists like C.L.Harris, F.A.Samuelson, R.A.Musgrave and A.T.Peacock.
Public Expenditure, as an instrument of fiscal policy, is now an established economic function of the modern government. Modern fiscal theorists argue that public expenditure should be used as a deliberate instrument to influence the level of economic activity. "The government uses its expenditure programme to produce desirable effects and avoid undesirable effects on the national income, production and employment." Public expenditure is now regarded not as a waste as classicals did but as a preventive of national waste. The impact of public expenditure on national economy is so great that no item of expenditure really has to be curtailed simply for lack of funds.

There are great many deficiencies in our society which cannot be met unless the modern government undertakes on its own to spend a large amount of money on public improvement and developmental projects - schools, hospitals, urban development, slum clearance, public housing, hydro-electric power, highways, streets, cultural

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Moreover an economy cannot hope to achieve full employment without the substantial contribution from public investment on construction like railroads, steel, machinery, mining, lumbering etc. Further it is important to note that 'the true wealth of a nation consists not in its physical assets, but in its capacity to produce a high real income. Tangible assets are indeed an essential basis for high productivity, but no more so than the skill, health and efficiency of the nation's citizens. Current outlays on education and health are surely as sound a public investment as outlays on power developments or highways. Today, more than ever before, intangibles such as scientific knowledge, skills, technical training, personal health and efficiency contribute to the development of a society. They are surely even more basic to the promotion of national wealth than mere brick and mortar. Sometimes projects like TVA, which cannot be undertaken by private enterprise, though they are profitable by reason of magnitude or risk

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3 Ibid., Pp. 185-186.
are undertaken by government. Likewise some projects though they do not yield a return covering even the direct cost are undertaken by government because, they enlarge total national income by an amount at least equal to their cost. Some projects undertaken by government expenditure contribute very little to Gross National Product, but contribute to well-being of the people in terms of their cultural and social values. Thus the expenditure programme by government produces many desirable effects on the economy and the life of people. The role of public expenditure in the national economy can be better understood by considering mainly its three sided effects on,

(i) **Income and Employment:** When underemployment is prevailing in the economy, increase in public expenditure without a decline in private spending will increase national income and employment with no substantial increase in price. The increase in national income may be several times the amount of the original expenditure. This is the familiar 'Multiplier Theorem' developed by Keynes as applied to government expenditure. The effect of increased

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government spending may also be beyond the multiplier effect. The profitability of investment will increase as the national income begins to rise, and once full utilization of existing equipment is reached, further rise in consumption causes a sharp rise in investment under the operation of the 'Acceleration Principle'. This increase in investment will be again subject to the Multiplier effect. Thus the Multiplier and the Acceleration Principle reinforcing each other bring about full employment in the economy.  

The above analysis shows that during a period of depression, an increased government expenditure will increase income, employment, and general level of prices (but without inflationary tendency) and thus help to promote economic stability lest private consumption and investment do not tend to decline. If public expenditure is continued beyond full employment level, price may show

5 In order to measure the total effects of initial expenditure on national income, economists like P.A. Samuelson, J.R. Hicks, R.F. Harrod and Alvin Hansen have tried successfully to integrate both the 'acceleration and multiplier'. The combined effects of the acceleration and the multiplier principles are popularly called as the 'leverage effects'. A. Hansen calls it as the 'Super-Multiplier'.
upward tendency and may cause real income to decline due to inflationary pressure. Public expenditure has, therefore, the double role of increasing both the level of real national income and the general price level. But in developing or underdeveloped economies, the public investment expenditure criteria cannot be viewed simply in terms of increase in income and employment. It is common knowledge that in such economies public investment expenditure is designed for initiating and accelerating economic development. The criteria to achieve this objective should be by maximising employment absorption capacity of the economy.

Both in the developed and the developing economies, labour is the most important economic resource and therefore the existence of unemployment is considered as an inexcusable waste of a strategic resource. If this be the case, the objective of employment cannot be delinked from the objective of production. It should in fact be a consequential goal of high level of production which may be the primary objective. It is understandable in this sense that it is not necessary to have employment as a separate objective of public investment expenditure as it is implied in the objective of growth. Under this new
strategy of employment-oriented development, the main emphasis should be on drawing more and more people into productive activity. In the economy of the type of India, unemployment and underemployment is high in agriculture sector only where nearly two-thirds of the entire population derive their livelihood. This large number of unemployed and underemployed cannot be transferred on mass scale to non-agricultural sector by mere development of the industrial sector because, this sector cannot even absorb the addition to the labour force in the non-agricultural sectors. Therefore a solution to the growing labour force has to be found mostly within the agricultural sector and by strengthening the rural economy. This requires that the public investment must build more and more of productive assets on which employment can be provided to large number in the rural areas. In this context the 'Rural Manpower Programme' introduced during the Third Five Year Plan period in India may be recalled.

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7 Ibid.
which to a greater extent succeeded in achieving the objectives of growth with employment by creating productive assets.\(^8\)

However, it cannot be summarily disposed that it is not necessary to have a separate employment policy for the economy of the type of India but to find a solution to it through a more rapid economic development. Though in such economies, the tendency is to over-emphasize the development rather than employment, it is rather imperative that greater attention should be paid to improve economic conditions of the sizable majority of the population by providing adequate and appropriate employment opportunities through public outlays at the proper place and in proper time.\(^9\)

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8 To know the impact of the programme see D.M. Nanjundappa, \textit{Op.cit.}, Pp. 122-128. He has given critical assessment of the programme and has offered operational guideline for taking up micro-employment planning preferably with a block/taluk as the unit to guarantee employment for the unskilled rural labour through special rural works.

9 \textit{Ibid.}, P. 124.
(ii) Redistribution of Income: In all modern communities, better distribution of income is considered to be the most important goal of government expenditure programme. Pigou points out that since a 'man's economic welfare is made up of his utilities, transfers of money income from the rich to the poor of similar desires, attitudes will increase economic welfare'.

His analysis is based on the following assumptions viz. (i) the law of diminishing marginal utility of money; (ii) inter-personal comparisons of utility; (iii) persons with the same income possess the same capacity for enjoyment.

New welfare economics of Hicks, Kaldor, Robbins and Hotelling do not agree with this. They argue that 'all ends other than maximization of income are value judgments and accordingly unsuited for scientific purposes'.

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\[12\text{ I.M.D.Little: A Critique of Welfare Economics, Oxford University Press, 1957, Ch.VI.}\]
there is and can be no such thing as an economics embodying only pure analysis and description. Economics must have a definite end - the material welfare of mankind. As such, dismissing value judgment is like throwing the baby away with the bath water.

Even when it is argued that an equal distribution of income may adversely affect the maintenance of high level of national income due to its adverse effect on incentives to work and save, there cannot be any controversy with regard to the expenditure policy of the government, which aim at reducing inequality with better provisions of education, health, housing and social security measures for the people who are now at low level of income in underdeveloped countries to maximise the economic welfare of the community as a whole. According to Dalton, "Other things being equal, that system of public expenditure is best which has the strongest tendency to reduce the inequality of incomes". Even Pigou has asserted that "from a long-run standpoint after incomes in excess of

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certain moderate level have been attained, further increases in it may well not be significant for economic welfare'.

As already noted, Keynes has suggested that the government should increase effective demand to increase income, production and employment in the economy. One way of doing this is to improve the distribution of income. According to him, the propensity to consume of the poor is greater than that of the rich. Therefore, he suggests that if there is less unequal distribution of income, total consumption will increase which, due to the multiplier effect, facilitates greater increase in national income and employment opportunities. This analysis is generally accepted by most of the economists.

From the above analysis it is clear that the redistributive effect of public expenditure is not only significant for maximising economic welfare but also to maintain a high level of employment and income.

(iii) Allocation of Resources: The problem of allocation implies, distribution of scarce resources among different ends in the most economical way, so as to ensure wise and
full employment of resources as a whole. Public expenditure can, in this regard, play effective role in the allocation of resources thereby influencing the compositions of gross national products. It is not the simple variation in the public expenditure for specific purposes but the change in the total volume of public spending and the nature of goods produced that can have a favourable effect on the volume of goods and services. For example, increase in the public investment to produce goods like water, electricity, or social goods like defence or education, changes the compositions of the gross national product altogether.

Increased public expenditure will also affect the production of private goods depending upon the state of employment in the economy. Musgrave holds that 'assuming a given level of employment, resource transfer occurs whenever the level of public expenditure on goods and services is changed'. In other words, the occurrence of the resource transfer is a consequence of the expenditure side of the budget.\textsuperscript{14} With the state of full employment, increase in the public absorption of resources, the output

of the private sector of the economy is reduced. On the other hand, if there is unemployment, government spending will not decrease the production of private goods and services. In turn, the government can provide more education, transport facilities, and defence and thus utilise the otherwise idle resources to produce goods that constitute a net increase in the national product.

Even the subsidy programmes of the government affect the output of private producers directly. The industries assisted by the government subsidy develop better and faster at the expense of other industries. For example, if grants are made for building houses for the middle and low income groups, resources begin to flow to construction industries only. Similarly, all other kinds of transfer expenditures of the government produce secondary effects on the resource allocation in the sense that there is a change in the distribution of income and consequent change in the pattern of consumption.

In the foregoing analysis, we examined the role of public expenditure in the national economy in the general setting. Now, let us sketch briefly the role of public
expenditure in the underdeveloped countries.

Of the three criteria of public expenditure discussed above, increase of income and employment and improvement of allocation of resources are a part of the general problem of economic development in underdeveloped countries. Therefore, the role of public expenditure in underdeveloped countries may be considered in terms of (a) economic development and (b) redistribution of income.

(a) Economic Development:

The major objective of public expenditure is the attainment of a high rate of economic growth. In fact, the theory of public expenditure in an underdeveloped country is a theory of public investment because, without increasing investment for productive purposes, the economy of underdeveloped countries cannot take a positive turn. Public expenditure in these countries should not only prepare the economy for structural change but for fulfilling the immediate needs by proper allocation of existing resources. The former is the long term objective of changing the nature of the economy itself for eliminating
poverty and want which is a task requiring effort over years. To achieve this, the pattern of investment should be such as to obtain the maximum rate of growth of output over years. In other words, investment should be concentrated on the development of capital goods sector which would lead to a more rapid rate of growth of investment (and ultimately of output) over the long-run. At the same time immediate benefits of the projects should not be ignored. For eliminating poverty and want, long-run growth of output by the concentration of investment in the development capital goods sector is not the only solution. The nature of investment should be such as to generate employment also. Accordingly the public investment should be planned.

It was long believed that 'if the gross national product was made to grow at a fast rate, this in itself would take care of the unemployment problem and of fair income distribution. In such an approach, employment objective became secondary and never got itself integrated in the overall strategy of development. It is now realised that the aim of promoting growth without considering its nature will not generate adequate employment;
leads to a greater imbalance in income distribution and does not tackle the problem of poverty. Therefore in a labour surplus economy, instead of solely depending upon the growth rate, what is needed is to make the entire labour force work on wealth creating activities so that such wealth can become the means of reproduction of wealth. This would introduce threshold incomes and minimum living standards for the masses and thereby contribute to capital formation which in turn would accelerate the growth of the economy. Therefore new development strategy must be one of development with more employment. Thus in underdeveloped countries, employment as a socially necessary condition has to become another major objective of public expenditure along with growth through capital formation. By the foregoing argument, it is understandable that public

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16 Ibid.

17 For arguments on similar lines, see R.A. Musgrave, The Theory of Public Finance, Op.cit., P. 425. He holds that while unemployment in developed countries reflects inadequate demand, underemployment in low income countries typically reflects inadequate resources (capital and otherwise) with which to combine the ample labour supply. The remedy therefore must be in capital formation and in more productive employment.
investment projects should be preferably based heavily in labour intensive techniques to generate not only more employment but such employment should also contribute to additional output.

Even during a short period, the public expenditure should aim at meeting the immediate needs of the economy by the efficient utilisation of existing scarce resources. This requires at first, the determination of the order of priorities among manifold ends in the scheme of development. Although it is a political decision, development of agriculture, provision of essential consumer goods and the establishment of small scale industries can hardly be neglected. Secondly, the efficiency demands the drastic curtailment of the non-development expenditure on huge and expensive administrative machinery and also the cost of establishment with regard to development expenditure. Unless it is done, inflationary bias might develop in the economy which ultimately hinders the rate of growth. Therefore, it is imperative that the public expenditure should be directed for real development work.

(b) Redistribution of Income:

Removal of income inequality is the next important
goal of government expenditure policy. Although it has been a controversial issue over which economists are sharply divided, public expenditure in an underdeveloped country should aim at reduction of inequality of income.

It is indisputable, as various studies show, that income inequality in underdeveloped countries is much greater than that in the developed ones. Simon Kuznets has made such a study, which reveals that in underdeveloped countries including India, the rich are richer and the poor are poorer than in developed countries. These studies further show that underdevelopment, low income and inequality tend to go hand in hand whereas development, high incomes and relative equality are associated with one another. It follows that if the distribution of income is to be more equal, the country should be exposed to the process of economic and social change associated with industrialisation which help to integrate the social and economic life of the people. In other words, only higher level of economic development

brings about equality of opportunity for all groups in the society. This view is agreed by Gunnar Myrdal. The reason for this is that economic development by improving educational facilities reduces the skill differentials. Consequently the distribution of wage incomes becomes more equal. Simon Kuznets has also pointed out that in final stage of economic growth the shape of income distribution will narrow down. This is because of the change in economic structure due to economic maturity in the process of industrialisation.

Public expenditure on social services (education, health, housing etc.) also play an important role in attenuating the inequality in the personal incomes. T.W. Schultz has said, 'A strong welfare goal of our community is to reduce the unequal distribution of personal income among individuals and families... Public investment in


human capital... is an effective and efficient set of expenditures for attaining this goal. In developed countries like U.K., U.S.A. and Canada, the social budget forms a major part of the total public budget. Such increase in social expenditures in these countries has substantially augmented the income of the lower income groups and improve the total distribution of income in favour of the poor. This fact emphasizes that under-developed countries should give due priority to the provision of such services in improving the income distribution in favour of the poor and neglected groups of the society. This is needed not only from ethical and humanitarian grounds but also from the economic point of view.

A dynamic approach to the problem of income distribution proposes that the realization of more equal opportunities is needed not only to spur and sustain economic progress but to realise the goals of social democracy. Unequal opportunities lead to economic waste in the form of loss of human capital because the poor don't get an

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opportunity to improve their own skill and the skill of their children in future. This hinders the rate of economic progress. Acquisition of mere physical capital does not accelerate the economic development. Certain minimum of human capital is a pre-requisite to the successful use of physical capital. Without the improvement in the human capital i.e., knowledge, skills, attitudes, physical capital is simply a raw material somewhat deranged. Therefore, underdeveloped countries should have a balanced approach to the investment in both physical and human capital to achieve the desired rate of economic progress. It follows from the above arguments that the public expenditure can play an important role in providing opportunities for the development of human capital. Moreover many of the underdeveloped countries have gone all the way to full democracy with universal suffrage. In such an environment, income inequality will not be tolerated in a society where the people have power to change the government. As Lewis has said, 'Popular enthusiasm is both the petrol and the lubricating oil of economic development - a dynamic force which makes almost all things possible'.

believe that the fruits of economic development will be shared by all, they co-operate with the planning for development by making necessary sacrifices. Otherwise they resist all plans which may hamper economic growth. The government cannot, therefore, mobilise popular support and enthusiasm without an equitable distribution of income. If a country is to forge ahead towards a social democracy, political democracy and economic democracy must go hand in hand.

Social Expenditure and Economic Development:

Social expenditures may in loose terms be labelled as 'investment in human resources' which would cover the expenditure on education, health, housing, sanitation and nutrition and some of the labour and social welfare programmes.²³ Expenditure on human beings is both an end and a means. Till recently, expenditure on health,

²³ In India, the habit is to lump together all these items of expenditure under the general heading "Social Services". Cf. D.M. Nanjundappa and M. Basavanna Goud. Expenditure Pattern in Developing Regions, Journal of Karnatak University, Social Sciences, Vol. IV, April, 1968.
education etc., were treated as mere consumer expenditures -
as ends of economic activities. It is now being recognised
that these expenditures are also means to certain economic
ends. They can be growth promoting factors with important
consequences on earnings of individuals, personal income
distribution and allocation of resources also. Investment
in human resources as means of promoting economic growth
consists in the improvement of knowledge, skills, capabilities
and efficiency of human beings as productive agents. Hence
the concept of 'Human Capital' has emerged in economic
literature.

The term human capital formation denotes the process
of acquiring and increasing the number of persons who have
the skills, education and experience which are critical for
the economic and political development of a country. It
includes investment by the society in education by employers
in training and investment, by individuals of time and
energy in their own development.24 Now there is a growing
interest among economists in the development of a 'theory

24 Frederick Harbison: Human Resources Development
Planning in Modernising Economics, International
of human capital to understand better the nature and problem of economic growth which was hitherto explained merely in terms of physical capital. This trend has compelled us to recognise the importance of education, health and other welfare measures which contribute to the formation of human capital.

A great impediment for rapid economic development in underdeveloped countries is the prevalence of ignorance, illiteracy and the lack of necessary skill and training on the part of their work-force. Such population can hardly possess adequate motivation which is a most potent factor in economic development. Prof. Myers and Prof. Harbison maintain that 'the broadening of the capacities of man, the extension of his knowledge and upgrading of his skills may lead to the best available road to economic development'. Hence the improvement of educational level and betterment of health of population play a crucial role in the development of underdeveloped countries.

Economists following J.S. Mill and Alfred Marshall treated as 'Capital' only those which are today non-human physical capital and omitted human capital from their
domain. Though Adam Smith, Von Thunen and Fisher presented an all inclusive concept of capital and took note of acquired and useful abilities of people, yet the idea that labour refers to capacities to do manual work only and this capacity is possessed by all labourers prevailed and skill and knowledge of labourer as a form of capital was not recognised. However important issues relating to the concept of capital have now been raised and discussed threadbare by some economists and other thinkers such as T.W. Schultz, John Vaizey, G.S. Becker, M.J. Bowman, H.P. Miller, W.G. Hoffman etc. and consequently the concept of capital has undergone substantial change.

Adam Smith was of the opinion that the acquired and useful abilities of all the inhabitants or members of society should be put in the category of fixed capital. He said, "the acquisition of such talents, by the maintenance of the acquirer during his education, study or apprenticeship always costs a real expense which is a capital fixed and realised as it were in his person.

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Those talents, as they make a part of his fortune, so do they likewise of that of the society to which he belongs. The improved dexterity of a workman may be considered in the same light as a machine or instrument of trade which facilitates and abridges labour and which, though it costs a certain expense, repays that expense with a profit.\textsuperscript{26} Von Thunen almost had a similar view.\textsuperscript{27} Fisher was in favour of a broader concept of capital where all these would be accommodated. But if human beings are to be considered as wealth or capital, economic system should be such that individuals should be free and not slaves. Marshall realised the importance of education as a national investment and according to him, 'the most valuable of all capital is that invested in human beings'.\textsuperscript{28}

Now, it is indisputable that increased public expenditure on public services like education and health

provide improved infrastructure for the development of the economy especially in underdeveloped countries by enhancing the efficiency and productivity of human factor. In other words, the efficiency of the human factor in the production process rests, among others, on the mental and physical factors.

Mental efficiency refers to the state of skills. Skilled labour is, now, becoming a necessary condition of economic growth in view of the development of science and technology in its application to practically all economic activity. Skills and knowledge in turn are determined by education and training. Thus education plays a very important role in economic development in its relation to the development of manual, technical, scientific, professional and other work skills in the economy.  

W.A. Lewis maintains, 'If at the beginning of 18th century land was the source of wealth, at the end of 18th century human labour, at the middle of 19th century capital, by the beginning of 20th century Organisation and management, now

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the fashionable candidate is education. Statistical investigations show in U.S.A. that only a half of the annual increase in production per head is due to increase in capital resources, and the rest is due to scientific progress associated with education. It follows that human mind has played the major role in economic progress in western countries. The basic reason why poor countries remain poor is unquestionable because they lack knowledge. So the study of growth would be incomplete if we fail to take into account the qualities of human resources. 'It is as if we have a map of resources which did not include a mighty river and its tributaries. The particular river ... is fed by schooling, learning on the job, advances in health, and the growing stock of information about the economy.'

Recently some attempts have been made particularly

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31 Ibid.
in U.S.A., for measuring the contribution of education to economic development. It has been estimated that education contributed to the growth of per capita real national income, during 1929 to 1957, to the extent of 42%. Another estimate for the period 1900-1956, revealed that the contribution of education to the growth of national output has been 350% higher than that of investment in material capital. In another context, Schultz talks about the part played by human capital in the rapid economic recovery of Germany and Japan in the post war period.

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The educational level of the labour force affects the volume of production when the curriculum of the educational system provides the knowledge needed for production. Education affects production directly and indirectly. When people with different capacities work, products differ. In so far as this difference in capacities is due to education, education directly contributes to production. Education is related to production indirectly also. Economic growth is nothing but a series of changes, in the size of the firms, the technique of production, the capital intensity of the firms and so on. As the size of the firm expands, the method of organising the firm and the techniques of production change. An educational labour force is essential to reap the benefits of large scale production. Changes in capital intensity must be accompanied by changes in the educational level of the labour force. So to say, "each level of capital intensity requires a labour force with a determined level of education". 37 Scientific knowledge is helpful in bringing about innovations which change the volume of production. It may, therefore, be said that the level of scientific knowledge is

the upper limit of production. But as V.K.R.V.Rao contends, all education should not be scientific or technical. He maintains that 'even if education is to be only skill-oriented it has to be recognized that there is a broad base of general education including literacy and language that is common and is a pre-condition to the acquiring of skills. Moreover, what economic development requires is not merely specific skills but also general skills'. Therefore, it emerges from what has been discussed above that very careful attention is needed to the relation between the general and special education which alone can ensure adaptability of the labour force to the changing requirements of economic dynamism. In underdeveloped countries, the technique of production are, to a large extent, imitative in character. Therefore, only educated labour force can learn quickly the higher level know-how from foreigners, who come to guide the people in the new line of production. It is observed that, 'in countries that are trying to speed up

their economic development, even when up-to-date plants are designed by first class engineers to use the latest methods and machinery from the most advanced industrial countries, the volume and quality of output are too often unsatisfactory. This is because in most cases managements and workers are inadequately trained and lack experience.

In this regard we have to agree with T.W. Schultz who maintains that 'countries with undeveloped human resources remain underdeveloped in spite of the massive imports of non-human capital because human capabilities do not stay abreast of physical capital and they do become limiting factors in economic growth.'

Further, attention must also be given to the place of research and innovation in economic growth because, the research and technology that are accumulated in developed countries, as they are conditioned to their own needs are not freely available to be transferred to underdeveloped countries. Even when they can be transferred, it requires re-orientation and re-adaptation that requires original research on the part of

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the underdeveloped countries. Therefore, underdeveloped countries should provide for adequate expenditure on research and higher learning also in their educational system.

The second set of factors that influence the efficiency and productiveness of the human factor relates to the physical fitness of the human beings. Health is no less important than education and the two cannot be isolated. They are not mutually exclusive. As Prof. Jack Wiseman points out, 'investment in health is dependent on other investments in people, such as education and work-training'. It is, therefore, maintained that in the studies of human capital formation separate effects of such a mix of investments (environment, health and education) can't easily be identified and measured.

An underfed worker - may be a labourer or a clerk or an intellectual - cannot put in his best effort with the result that his productivity is low. As a result, his

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income, food consumption and again his productivity go on falling. It creates a kind of vicious circle. This situation is a part of the phenomenon of underdevelopment; but it is also true that this situation improves as a result of development. So 'one way of speeding up development - and a way which simultaneously tackles both the means and ends of economic growth is to take whatever action is possible on the physical front and minimise, if not eliminate, the conditions, which prevent the human being from physically being able to put in his best'. The problem of health is not only remotely connected with economic growth but has at times a direct bearing on the development of the economy. For example, the Indian cultivator is inferior in health and energy hence in productivity to his counterpart in U.K. and U.S.A. He is a prey to a host of diseases which not only kill many but undermine the efficiency of those who survive.

In improving the human efficiency, on the health front, provision of basic necessities play a decisive role. These include quantity and quality of the diet and also

health and physical condition of work. One has to agree with the suggestion\textsuperscript{43} that a programme of opening up of canteens to provide well-balanced and subsidized food to workers at attractive prices goes a long way in solving this problem. A programme on a massive scale should also be launched to eradicate the epidemics (e.g., Malaria) not only to reduce mortality but also to reduce the man-years of labour that are lost through sickness and improve the quality of the labour which has a direct bearing on the productivity of a country. Similar is the effect of adequate supplies of drinking water and all other measures of public health. What is important to note here is that "more and better food, good housing, eradication of disease, the provision of public health facilities and satisfactory physical conditions of work are not only the end product of efficiency but also the determinants of efficiency".\textsuperscript{44} Mushkin is also of the view that "investment in health consists not only in health programme but also in the form of food, housing, recreation and clothing".\textsuperscript{45} This may seem

\textsuperscript{43} These are mentioned in V.K.R.V. Rao, \textit{Op.cit.}, P. 160.

\textsuperscript{44} Ibid.

to emphasize the consumption aspect, but where there is inadequate food and incongenial housing which undermine health, investment in food and housing will certainly improve productivity and will have an yield comparable to that of an investment. In any case health measures which reduce debility and disability would of course be entitled to be classified as investments affecting productive capacity of human beings. 46 Although the direct contribution of health expenditure to the growth of national output is disputable, it is recognised that the benefit of health expenditure in reality cannot be dissociated from benefits arising from additional education, technological innovation or any other determinant of the rate of economic growth. 47 A child is able to take adequate benefit of schooling provided he enjoys good health and similarly an adult is able to use his knowledge and experience to the extent he is physically fit and alert. Therefore, the expenditure on the provision of the medical and other health facilities stated above are productive and should be treated as


The role of public expenditure on social services need not be limited to capital formation alone. A new philosophy is being developed in which emphasis is laid on economic growth with social justice. It is in this context of development that the basic minimum needs have acquired added importance in Indian planning. It is important to note that there is something like minimum levels of consumption for all of the social services like education and health which help to reduce both personal and inter-regional inequalities. These are the important components of basic necessities of community in a welfare state. Accordingly the 'National Programme for Minimum Needs' was incorporated in the Fifth Five Year Plan to allocate resources for social consumption for all areas with the aim of establishing throughout the country a network of certain essential services not only on co-ordinated and integrated basis but on certain predetermined criteria of uniformity and equality also.

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In the formation of this programme it was decided, as a first step, to identify the priority areas of social consumption and for each of them a minimum norm of attainment was laid keeping in view the consideration of improving the overall quality of life and supporting the sustained economic development. Accordingly it was decided to concentrate attention on programmes relating to social services like elementary education, rural health, provision of house sites (along with nutrition, drinking water, slum improvement, rural roads and rural electrification). The contents of these programmes are:

(i) the provision of facilities for elementary education for children up to the age of 14 at the nearest possible places to their homes;

(ii) ensuring in all areas a minimum uniform availability of public health facilities;

(iii) provision of developed home sites for landless labourers in rural areas.

An important feature of the programme is that various schemes included in it are viewed as integrated parts of a
package of facilities. The revised 'Minimum Needs Programme' has been spelt out in the Draft Plan for 1978-83 also. According to that attention has been focussed on the removal of unemployment also and thereby improve the standards of life of the poorer section of the society. It also aims at reduction of the regional imbalances and disparities between rural and urban areas.

The conclusion that emerges from the above discussion is that although the objective of adding to the stock of physical capital has dominated the investment discussions, it has now become imperative that the highest priority should be assigned to the investment in human capital. The rate of economic growth is thwarted more by a deficiency in the knowledge, skills and efficiency embodied in human beings and less on account of the paucity of physical capital. If the surplus manpower in developing countries is to be related to economic growth as a direct variant, it is imperative that the quality of the human resources must be improved upon by investing adequate amount of money in the education, training and health of their people. Especially countries like India, which are rich in human resources should adopt a far more positive and studied approach to the productive use of human factor if the latter
is to come to its own as a positive instrument for increasing both production and productivity. As Prof. Pigou suggests, 'a given sum of money should be wisely expended to obtain increased production in the education and health of the people especially of the young than to expend on the creation of new material capital.'

Need for Efficiency Criteria in Public Spending:

When public expenditure, as an instrument of fiscal policy, has become an established economic function of the modern government, we have to evolve an objective criterion or a technique that helps the government authorities to appraise the value of a particular expenditure project i.e., its efficiency.

At the outset, one thing should be noted that in these days of socialistic attitude of the modern government, it is exceedingly difficult to appraise the value of all

49 A.C. Pigou; Wealth and Welfare, Pp. 355-56; He argued that marginal net product of resources wisely invested in persons is higher than that of resources wisely invested in the material product.
government expenditure projects purely in objective terms. It is still more confounding in case of expenditures on services whose social values can hardly be appraised and their consequences foreseen. However, since the funds at the disposal of the government are limited, it is increasingly important to evolve a sensible and consistent criterion in allocating these funds efficiently between various competing projects.

Fiscal theory still being on the border line between economics and politics, collective decision making is not a privilege of, but a problem to the public authorities. Especially in a democracy as collective decisions arise out of the behaviour of individuals responding to alternatives placed before them, any satisfactory treatment of the public economy must essentially examine the way in which such decisions are made. As Mckean has remarked, 'there is no demonstrably correct or universally agreed upon criterion for public spending'. According to him, 'it is a process wherein

groping, bargaining and adaptation among politicians, voters and government employees operate like an unseen hand to constrain each individual and guide decisions.

As such, decision-making has still remained as a problem in public expenditure theories.

Expenditure decision involves budgetary procedure and is generally the function of the executive. This decision-making by the executive is concerned not only with the total volume of expenditure but the expenditure allocation among various competing items. In these days of changing needs and opportunities of social life, no item of expenditure is said to be a permanent commitment. Its importance may vary from the top priority to the last item in the list or even may be dropped and may be replaced by a new item. However this inclusion or exclusion of any item of expenditure depends on the feasibility of the project. Objective and subjective considerations do enter into the decision-making process of the modern democratic government.

In a democratic society budget determination is done through voting process. But voting process is both the hero and the villain in piece.\(^5\)\(^2\) It has failed to conform to the unanimity rule. The 'Social Welfare' criterion hitherto employed as the appropriate criterion for public spending has ceased to be operative. Moreover, in the economic appraisal of the various budgetary composition this subjective criterion does not provide any objective base. Sometimes the decision-maker is guided by the relative subjective values he attaches to alternative choices. But these subjective evaluations are likely to differ. Therefore, to replace this subjective notion of efficiency by an objective notion rationality in decision-making may be taken as the appropriate criterion. This rationality in decision-making implies assigning values to alternative courses of action by the decision-maker albeit consistency in his choice. In other words, this rationality requires the decision-makers to be more fully informed about the alternative courses of action by which the efficiency can be objectively measured. Therefore, given the rationality

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in decision-making an objective efficiency criterion certainly helps to determine which of the possible alternatives is the correct one.

Moreover, in a democratic process the absence of objective efficiency criterion introduces an element of uncertainty in decision-making because, the administration (minister) shall have to await the reactions and approval of his other colleagues in the cabinet for his proposal on the sub-budget items besides majority vote in the legislature on the budget in general. In addition to this, as stated earlier administrative decisions are mostly associated with the value judgements of the party in power also. There is also a room for pressure groups to influence the decision-making. Therefore, both within and without government, some techniques need to be evolved for increasing operational efficiency by minimising the arbitrary character of expenditure allocation. In this direction, cost-benefit analysis provides an objective room to the decision-maker himself to increase efficiency in government spending.
Cost-Benefit Analysis in recent years has been immensely used as a tool to evaluate the efficiency of the public investment projects both in developed as well as developing countries even with mixed economic system. Although the underlying theory of cost-benefit can be traced back to the welfare economics of the nineteenth century, the incorporation of CBA in economic theory in fact has now become an inseparable part of welfare economics because its use aims at knowing the efficiency of a particular project in maximising social welfare.

As stated earlier, although the idea of CBA is not new, the thoughts on it developed only after 1950 with the simultaneous publication of works by Eckstein, Krutilla, Marglin, Mckean etc. But only from the beginning of seventies the application of CBA is extended rather vigorously to public expenditure on social services like education and health.

As a tool of public expenditure evaluation, CBA purports to describe and quantify costs and benefits of a public project in terms of a common monetary unit on the basis of some accepted investment criterion. The acceptance or the rejection of the project depends upon the costs and benefits functions. If benefits exceed costs the project is accepted otherwise it is rejected. That the CBA has over time undergone some changes in its definition and implication is evident in the definition given by Prest and Turvey. They define it as 'a practical way of assessing the desirability of projects where it is important to take a long view and a wide view, i.e., it implies the enumeration and evaluation of all the relevant costs and benefits'. Doing this, as they say, involves drawing on variety of traditional sections of economic study - welfare economics, public finance, resource economics - and trying to weld these components into a coherent whole.

CBA, in fact, is employed as a tool for project justification rather than for the design of the project.

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such that the desirability of the project can be practically assessed. This helps to solve the problem of choice on a micro basis by ranking the public projects and programmes in terms of their economic efficiency. As such it is an efficiency tool to attain the optimum allocation of resources in the public sector. According to Pierce, CBA is completely a technique to evaluate social projects. In other words, the evaluation of the social benefits is the objective function of CBA. In this sense it differs from the objective function of a firm where the investment appraisal based on market mechanism is in terms of net private benefits to the exclusion of the external effects of a project.

Market mechanism which determines the optimum allocation of resources from the individual point of view in the sense of maximising individual satisfaction cannot be accepted in the case of public investment projects to fulfil the efficiency criterion from the social point of view. Public goods are indivisible in the sense that

\[55\] In the literature we find many synonyms for this term viz. 'Collective goods', 'Collective consumption goods', 'Group consumption goods', and 'Social goods'.

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they are not subject to the application of the exclusion principle but are subject to external effects. Hence market forces do not operate for the provision of public goods.

In the case of private goods, the consumer shall have to reveal his preference if he desires to consume them. Otherwise he will be excluded from the enjoyment of those goods. On the other hand, consumption of public goods which are supplied by government, cannot be restricted to certain group of society irrespective of the payment for them. People receive them sometimes without revealing their preference. Such goods are social in nature. Under such circumstances, the government shall have to face a dual problem of meeting on the one hand society's needs and on the other the efficiency in supplying such goods. The solution to this problem can be provided by CBA if the government takes a decision taking into account the society's preference revealed by the cost benefit of a social project.

Some goods supplied by the government are such that they satisfy both private and social wants. For example,
free and compulsory education satisfies the individual want and also the public want that no individual should receive less than a minimum standard of education. Such goods are generally known as 'merit wants' goods or 'merit goods'. Musgrave defines 'merit wants' as 'such wants which are met by services subject to the exclusion principle and are satisfied by the market within the limits of effective demand. In view of the needs of the society they are imposed by the government and left to the individual choice in the sense that they are provided through the public budget over and above what is provided through the market and paid for by private buyers. Other public services which aim at the satisfaction of merit wants include such items as publicly provided school luncheons, subsidized low cost housing. But even such merit wants, it should be noted, create external effects. As such market mechanism in such wants also can't prevail effectively in the sense that the society's preferences are not revealed in the provision of such public goods. Therefore, the government shall have to face the problem of finding out an alternative mechanism

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57 Ibid.
which helps in revealing the preferences of the society. As an alternative course 'political mechanism' represented by 'voting' (where preferences of the consumers are roughly revealed adhering to the group decisions) is suggested in a democratic society. But this 'ballot box' technique being a political process, its rationality on the economic plane is highly questionable because, this can lay down only the broad guide lines for the solution to the problem. G.H.Peters\textsuperscript{58} contends that the decisions to provide these goods have largely come to rest with ministers and public officials. It is against this background that the interest in CBA has grown. It is now widely accepted that the CBA should be advocated for dealing with projects in which investments are large and indivisible and in which group wants are catered for where prices are not charged to consumers for the use of final output. CBA is also advocated where there are important externality effects. This amounts to say that government, in its programme of satisfying group wants, shall have to resort to CBA to achieve economic efficiency of its spending.

Like in consumption, where the consumer will spend his given income in such a way as to maximise his satisfaction, government should also allocate its scarce resources on public projects so as to derive maximum net social benefit. This demands 'economic efficiency' in government spending in terms of the relationship between the quantity of input and the quantity of output resulted thereupon. Larger the output per unit of input, greater would be the efficiency in the process of spending.

Krutilla and Eckstein have defined 'economic efficiency' in case of public expenditure as 'a situation in which productive resources are so allocated among alternative uses that any reshuffling from the pattern cannot improve society's position and still leave the society as well off as before.' If this rule governs the policy decisions, then alone the CBA is sure to guide the decision-making by government. But as we know, most of the economic decisions are taken under the framework of political process of decision-making. In a democracy, government no doubt is the apparatus to carry out the will of the people. But in doing so, it should not incur that expenditure which

pleases the voters strictly. Its function is to maximise social welfare. This social function should not become the by-product of its political function of vote maximisation, but should become the ultimate aim of its overall policy. This emphasizes the fact that while accommodating the political reality of democracy in economic theory of Government decision-making in a democracy, the goal of political and economic policy should be to maximise social welfare only. Then alone the CBA can be an aid to decision-making process as well as to decision-making body and its role becomes unquestionable. In that case it can well be assumed that the decision-maker aims to maximise the difference between social benefits and social costs.

CBA is now advocated not only for developed countries but also in developing countries. When the latter are characterised by the scarcity of capital, it is desirable and imperative as well that such countries should use their scarce capital in the most efficient manner to pave the way for development by breaking the vicious circle of poverty. Here comes the role of CBA as an efficient tool to utilise the scarce resources in such countries because, it examines the feasibility and utility of the public project not only from the point of maximising social welfare but also from the point of overall economic and social development.
Besides, many more advantages are also claimed in CBA. Recently it has become a tool of operations research also as it is being used in conjunction with Systems Analysis in making public expenditure decisions for optimal allocation.

From the foregoing discussions we can conclude that CBA is a tool for government decision-making. It gives a clear information on the economic effects of alternative public expenditure decisions and also helps to find out the relative greatest net benefit from them. Thus it helps the process of political decision-making also.

CBA comprises of four basic steps in evaluating the public investment projects:

(i) Identification, enumeration, measurement and pricing of various relevant benefits, costs and effects of a project;

(ii) Discounting these benefits and costs back to

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present value with some agreed rate of discount (social rate of discount);

(iii) Adjustment for risk and uncertainty;

(iv) Evaluation of the project with some suitable investment criterion taking into account all relevant constraints.

Such evaluation procedure enables the government to select that project alone which is most feasible and worthwhile from the social point of view. Let us now elaborate on the contents of these steps.

**Costs and Benefits:**

Benefits of public expenditure project can be referred to as its contribution to the objective function whereas costs of the project measure the reduction in that objective function. Generally the benefits and costs of a project can be categorized under two main heads viz. direct or primary, indirect or secondary. Direct and indirect benefits can further be divided between pecuniary and non-pecuniary, tangible and intangible etc.
Direct benefits are the immediate effects of the project (benefits that accrue to the users of the project's output or service reflected in the stream of income arising from the investment). Similarly the actual expenses (in money terms) incurred for the project are direct costs (costs of the primary or direct inputs used in it). Indirect benefits (that accrue to the non-users of the project's output) are the values added by incurring secondary costs on activities induced by the project. Secondary costs in turn are the opportunity costs, external diseconomies (which are referred to as the discomfort, the inconvenience and other unpleasantness resulting from the construction and operation of the project) and unfavourable intangibles which are also the effects induced by the project.

After identifying the relevant costs and benefits of the project next important step is to express them in monetary terms. For this purpose economists have devised shadow prices. Shadow prices are other than the observed market prices. These are used while taking decisions on public investment policy to give a better efficiency evaluation of projects from the social point of view as they are believed to reflect true social costs and true
social benefits of the projects. In the real world as all economies are characterised by market imperfections, market prices fail to be the true guide in determining the true social costs and true social benefits of the project. One important reason for the inadequacy of market prices to account for all the costs and benefits associated with the project is the presence of external effects. According to Dasgupta & Pearce, "Shadow prices can be thought of as the marginal rate of substitution between output in question, the amount of one output which we have to sacrifice in order to obtain another output. There is always a 'trade off' between the two uses and it is the shadow price of the output which reflects this true costs." Thus shadow prices reflect the true social opportunity costs of using resources in a particular project as in any society's objective function there will be a sacrifice involved in applying resources to one use rather than another. Therefore, it can be said that the relevant price for cost-benefit purposes is the price which reflects this social opportunity cost.

There are mainly four methods to estimate shadow prices viz.

(i) estimating through the mathematical technique of linear programming;

(ii) imputing them by considering the relationship of prices observed in markets for similar items or for the same item in markets in other countries;

(iii) by determining the prices implied by other governmental choices;

(iv) by making adjustments in market prices.

Social Rate of Discount:

Benefits and costs of a public investment project accrue overtime and the values of these benefits and costs change in the long term. Therefore, all these benefits and costs, regardless of their nature, are to be discounted at the same rate (this rate is constant over time) to get their present value. Hence in CBA the need for the discount rate arises.
The concept of the social rate of discount represents the relative weights which society assigns to a marginal amount of consumption in different time periods. In general, it could be considered as the premium that present consumption will have vis-a-vis future consumption. In other words, the discount rate in CBA can be understood as a shadow price which reflects society's 'trade off' of present against future benefits and costs.

The problem of deriving a social rate of discount is essentially a matter of 'value judgement' and this is probably one of the reasons why there seems to be no 'consensus' among economists on an appropriate rate to be used to discount public investment projects. There are more than one SDR (Social Discount Rate) used in CBA such as STPR (Social Time Preference Rate), SCOR (Social Opportunity Cost Rate) and another one is 'Synthetic Rate' (Synthesis of both STPR and SCOR). One argument is that if the Internal Rate of Return (IRR) is used to evaluate the project, the discount rate is not necessary because the internal rate itself is the discount rate. However the consensus is that a synthetic rate reflecting both
SIPR and SOCR should be derived. According to Eckstein, following are the decision rules to select interest rate for public investment projects in an imperfect economy:

(i) identify the actual opportunities that are foregone and measure the flow of returns that would have been earned in the alternative uses;

(ii) apply the Social Rate of Time Preference to derive the present value of the returns foregone in alternative uses;

(iii) undertake only those public investments which yield more present value per dollar of expenditure than the foregone alternatives.

Risk and Uncertainty:

Although the two terms are frequently used synonymously in the practical literature, it is convenient to distinguish between them. A risk situation exists when

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the value of a variable (the benefit flow, discount rate, costs) is not known but its probability distribution is known. On the other hand, uncertainty pertains to a situation in which the probability distribution is not known at all. 63

Various ways of allowing for risk and uncertainty have been proposed because of the fact that public projects are not risk-free. But economists are divided on the opinion of applying risk and uncertainty on various grounds. Whereas Hirschleifer 64 has strongly stressed the importance of making allowance for risk and uncertainty, Arrow and Lind 65 suggest that there are good grounds for ignoring risk on public investment projects.

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However it may be concluded that as the issue has still remained controversial and problematic, treatment of risk in cost-benefit analysis can be ignored to simplify the problem of public investment appraisal. Even if risk is relevant in the public investment appraisal the planner is faced again with the problem of how best to allow for it. To say strictly, an approach based on objective probabilities is not permissible because, the projects are not repeated fairly in large number. As such the probabilities attached to outcomes are likely to be subjective.

Investment Criteria:

In the above sections our discussion centred around the basic steps to be followed in evaluating the public investment projects from the social point of view viz. identification, enumeration and measurement of costs and benefits of a project, and choosing appropriate discount rate to discount the benefits and costs back to present value and the problem of allowing for risk and uncertainty in public projects. In this section we analyse the

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techniques that can be used for meaningful evaluation of the project. This technique should have to be derived from the objective functions sought to be maximised i.e., maximisation of the welfare of society. But as there is no agreement on what constitutes a desirable social welfare function, economists have substituted in its place the more modest goal of maximising the stream of future income from the investment projects, as the goal of public policy. To know whether this goal can be achieved, an appropriate investment criterion is to be chosen in CBA.

As we know, public investment projects are characterised by interdependencies, incompatibilities and budgetary and non-budgetary constraints, an investment criterion chosen to evaluate the projects in CBA should incorporate all these components. There are three important alternative criteria that are applied in practice for the choice of the project, viz.

(i) Present value of Net Benefits (B-C) Criterion

(ii) Benefit Cost Ratio (B/C) Criterion

(iii) Internal Rate of Return (IRR) Criterion
Criterion (i):

This criterion lays down the rule that both benefits and costs of the project should be discounted back to present value and then compared. Symbolically,

\[
\sum_{t=0}^{n} \frac{B_t - C_t}{(1+i)^t} > 0
\]

Where \(B_1, B_2 \ldots B_n\) are the series of prospective benefits in the years 1, 2...n and \(C_1, C_2 \ldots C_n\) are the series of costs in the years 1, 2 ... n

\(S = \) Scrap value
\(i = \) interest rate (i.e., SDR used in this criterion)

Thus the equation can be written as:

\[
\sum_{t=0}^{n} \frac{B_t - C_t}{(1+i)^t} > 0
\]
Criterion (ii):

In this criterion Benefit-cost ratio (B-C ratio) of the project should be greater than one or unity.

Symbolically,

\[
\frac{B_1}{(1+i)} + \frac{B_2}{(1+i)^2} + \ldots + \frac{B_n+S}{(1+i)^n} > 1 \text{ or Unity.}
\]

\[
\frac{C_1}{(1+i)} + \frac{C_2}{(1+i)^2} + \ldots + \frac{C_n}{(1+i)^n} > 1 \text{ or Unity.}
\]

In equation form,

\[
\sum_{t=0}^{n} \frac{B_t}{(1+i)^t} > 1 \text{ or Unity.}
\]

\[
\sum_{t=0}^{n} \frac{C_t}{(1+i)^t} > 1 \text{ or Unity.}
\]

Criterion (iii):

In Internal Rate of Return method, that rate is taken which gives the project the present value = 0 and
then this rate is compared with predetermined SDR i.e., IRR which makes present value of benefits = present value of costs.

If SDR < IRR (new solution rate), project is sanctioned. Symbolically,

\[
\frac{B_1-C_1}{(1+r)} + \frac{B_2-C_2}{(1+r)^2} + \ldots + \frac{B_n-C_n}{(1+r)^n} = 0
\]

In equation form,

\[
\sum_{t=0}^{n} \frac{B_t-C_t}{(1+r)^t} = 0
\]

Here \( r \) = Internal Rate of Return which should be compared with 'i'.

From these investment criteria, we can set 3 decision rules viz.:

(i) select all the projects where the present value of benefits exceeds the present value of costs (i.e., select those projects which have highest present
value of net benefits);

(ii) select all the projects where the ratio of the present value of benefits to the present value of costs exceeds unity or \( > 1 \) and reject those where this benefit-cost ratio is \( < 1 \).

(iii) select all the projects where the internal rate of return exceeds the chosen rate of discount (i.e., \( \text{IRR} \geq \) accepted SDR).

The choice between them depends upon the nature and type of the project (gestation period). However, the present value rule is the safest rule for use in CBA and there is a general inclination to favour the NPV (Net Present Value) rule in both theory and practice.\(^67\)

**Distributional Aspects of CBA:**

Now-a-days there seems to be a general agreement that, of all sorts of government, democracy is the best. The reasons for such belief are two fold. Democracy aims

at preserving individual liberty to do something that one chooses. More important, it aims at promoting individual and social welfare. This welfare is a corollary of situation which refers to our levels of living and the way in which we live. In this sense the concept of welfare merges into the social problem of 'distributive justice' which implies achieving of fairer distribution of national income. In other words 'maximisation of social welfare' is necessarily related to an equitable distribution of income and wealth.

As stated earlier, the CBA is used as an efficiency tool to evaluate the public investment project which aims at 'maximisation of social welfare' (social benefit). But this 'social welfare' need not and cannot be identified with pure economic efficiency in terms of maximising social net benefits (to whomsoever they may accrue) over social costs because, social welfare in a democracy is necessarily a function of the distribution of income between individuals in society. For example, greater the inequality in the distribution of income between the individuals in the society, the farther away we are from our goal of maximising social welfare. In this sense efficiency and equity aspects of public projects are
inseparable propositions. As Samuelson has shown, it is not only possible but also necessary that issues concerning both these problems should be treated simultaneously and as aspects of the same problem of optimisation. Therefore, though CBA was devised as an 'efficiency tool' to evaluate the public investment projects, it cannot remain as a principle of merely 'comparing benefits with estimated costs' without concerning itself as to whom such benefits accrue in a democratic society. Currently cost-benefit analysts are convincingly showing interest in assessing distributional effects of a social project in their studies, though till recently this equity aspect was ignored.

The proponents of CBA have given mainly the following explanation for ignoring the distributional effects of a public project viz.: 69

(i) Marginal utility of income is the same for all. It means a rupee of additional income is of equal


value for all. Likewise additional cost of one rupee is equally burdensome to all.

(ii) A second justification for ignoring distributional changes is that the distributional effects of a single project are negligible. Hence the distributional effects of all projects are assumed to be neutral.

(iii) Incomes reflect marginal productivity. It is socially approved that if marginal productivities of individuals differ their incomes should differ. Hence it is consistent to assume that the distribution of income is equitable.

(iv) Even if one project causes adverse distributional effect it may be compensated by undertaking another project with less distributional effect. This process of redistribution does not involve any cost. This can be achieved by the consensus of the society which can decide whether the specific distribution is socially equitable or not. This statement resembles the 'Hicks-Kaldor compensation Principle' in welfare economics.
(v) According to Dasgupta and Pearce, the incorporation of distributional effects in CBA would involve apparently 'ascientific consideration' i.e., it involves the question of value judgement to determine the optimal distribution which is very difficult and also creates confusion.

But all the above arguments are not sound because,

(i) Marginal utility of income is not the same for all. It is widely accepted that marginal utility of income declines with every increase in income and vice versa.

(ii) Secondly, the marginal productivity argument is also not sound because of the uncertainty element in our belief that the people are paid their marginal social product. In fact they are not paid so.

(iii) In a dynamic society, it cannot be conceded that any existing system of income distribution is

socially acceptable for all the times. Redistribution of income takes place continuously by the changing process of economic and political decisions. As these decisions, as we have noted earlier, again involve value judgements, it becomes very difficult to find out a 'norm' for equitable distribution.

(iv) Every project, especially when it is large, has its distributional consequences. On the other hand even if the effect of a single project is negligible the cumulative distributional effects of many investments may be significant.71 As such ignoring them makes the evaluation elusive and superficial.

(v) To the extent that value judgement underlies the concept of an 'efficiency benefits' which are nothing but the aggregate of individual preferences, the CBA can come to our help to determine the optimal distribution (i.e., to

determine whether a distributional change consequent upon a project is good or bad with the help of social preferences).

Therefore, many writers maintain that the objective function of CBA should not confine to only maximisation of net efficiency benefits to the society over social costs but it should explicitly incorporate the distributional objective also. One essential of the CBA, then, becomes a survey of the incidence of benefits and costs across income and class groups.72

The conclusion that emerges from the above discussion is that to the extent possible, one should not overlook the society's preferences about the distribution of income. Nonetheless distributional considerations are relevant to political decision-making process also. Even the overall upliftment of the society does not entirely depend upon the degree of economic development but also on the social welfare. Mere maximisation of the national product does not solve the problem of social well-being.

72 Ibid., P. 28.
It should be seen that it is equally distributed. For example, it is the experience of underdeveloped countries including India that in spite of the increase in their G.N.P. the general standard of living (i.e., the real income) of the people has been found to be declining. This fact calls for giving more attention to the distributional effects on the society as a whole rather than to mere development effect of government investments. Therefore, it becomes imperative that the scope of CBA should be extended to know who are the beneficiaries of the government investments and how benefits accrue to them along with the comparison of the benefits with the estimated costs. Thus both the 'efficiency' and 'equity' must become the objective function of CBA. The force of this view is stronger for countries where substantial divergencies in the distribution of income occur.\footnote{D.W.Pearce: Op.cit., P. 28. It may be noted that in India although national income increased substantially during 1951-1961 (First and Second Five Year Plans) the inequality in income distribution widened.} This view is also supported by Dr.Alder who asserts that "the simplest and in a sense most radical method is to base the selection of development projects
not on the size of the total net social return, but on that part of total returns that accrues to beneficiaries below a certain level of income." \(^74\) Inspite of this, the traditional view of ignoring distributional effects still dominates most analysis on the ground that incorporating equity aspects is a matter of value judgement and there is no logical way of doing it. However efforts are now and then made to incorporate equity aspects in CBA. Basic attempt started by the publishing of article by B.A. Weisbrod. \(^75\)

Proposed Methods to Allow For Distributional Effects: \(^76\)

Three methods are proposed to allow for distributional effects viz.:


\(^76\) These are also discussed in N.P. Pandey: Op.cit., Pp. 35-50.
(i) Tax Transfer Method

(ii) Display Method

(iii) A Weighted or Trade off System.

(i) In this method both efficiency and equity aspects are reconciled by the use of taxes and transfers among different groups classified according to some strata such as age, sex, region, income, occupation etc. in the economy. This method assumes that every government investment decision favours some group more than others. If the beneficiaries belong to higher income group, in this method the government imposes heavy taxes on this group of people and redistributes the tax proceeds among less favoured and low income groups. Higher and lower income groups are determined on the basis of current standard of living and the purchasing power.

But this method is subject to severe criticisms not only because tax transfers are made in lumpsum but more so it is difficult to determine a particular tax rate and the
fear of resulting in discrimination in doing so. Even if this solution is accepted the economy may take long time to adjust to this mechanism. Burkhead and Mincer have supported this method with a qualification that there must be a 'well-ordered public finance system'.

(ii) The 'Display Method' considers only the distribution of benefits on equity basis irrespective of the efficiency aspect. In this method, project benefits are distributed among different groups in the economy classified according to age, sex, family size, income, religion, education, race, region etc. With reference to various tables in this regard, projects with most equitable distribution of benefits (irrespective of the efficiency aspect) will be selected. This method presents distributional effects separately. Weisbrod divides the beneficiary groups in four segments as being the criteria for analysing the distributional effects viz. income, age,

77 For critical appraisal of this method see T. Mathew: Economics of Public Expenditure, Vora & Co., Bombay, 1972, Ch.II, P. 43.
racial groups and regions (geographical areas). According to him each group receives benefits in proportion to costs incurred on its behalf. In case of public goods each group receives benefits equal to the fraction of total beneficiaries.

But in the application of this method many complications arise. For example, construction of tables according to the size of benefits for different money income groups and geographical regions, is a laborious task and number of assumptions are to be made. Secondly, measurement of redistributional benefits realised by a particular group requires making aggregates of all consumption benefits and costs (direct and indirect) of a project along with accompanying cash transfers. Thirdly, in regional classification, it shall have to be presumed that in poor regions, benefits and costs are uniformly distributed among the population. Lastly, this method fails to incorporate the secondary benefits of a project which are equally important in project evaluation.

(iii) Weighted or Trade off system is an integrated form of criterion which includes both 'efficiency' and
'equity' aspects. In this method, efficiency benefits and the project income are weighted (the weighting system being chosen by the planner) and the weighted sum of the efficiency benefits and the project income becomes the criterion. Further it is assumed that the total social welfare or utility is the sum of the contributions of each individual to the society which is a function of his own income alone. Then social marginal welfare functions for all individuals are assumed alike-cardinal and downward sloping functions of individual income. Then increments to income for different persons are weighted according to the initial levels of individual income. Symbolically,

\[ W = W(Y_1, Y_2, \ldots, Y_n) = \sum_{i=1}^{n} W(Y_i) \]

Where \( W \) = aggregate social welfare

\( Y_i \) = net income of \( i \)th individual.

But as this method fails to recommend basic methods to assign weights, the social welfare function from this

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analysis becomes less relevant to actual practice.

As it is a more widely accepted approach, it has attracted the support of many economists. Of them, the approach of Weisbrod is supposed to be thought provoking because, it not only involves a number of simplistic assumptions but more so it points out the way to general methods of deriving weights. He developed a grand efficiency which "would facilitate consideration of both actual and desirable Marginal Rate of Substitution (Trade Offs) between efficiency and equity". He measures efficiency aspect of CBA in a formal way but distributive aspect is measured as the difference between two measured quantities - the efficiency portion and the whole. He starts with Bergsonian model of social welfare function with some alteration for operative purpose. He assumes that change in the welfare of each individual is the

\[ \text{B.A. Weisbrod: Op.cit.} \]


"product of the change in income (Y)... and the Weights (importance) of (a, b, c, ... n) attached to that change in income. Thus,

\[ dw = a(dw_1) + b(dw_2) + ... + n(dw_n) \]

\'dw' is measured by estimating values of the weights a, b, c ... n which in effect are marginal utilities of income for each person." Thereafter he examines the costs and benefits of the projects attributed to each group of persons (he makes four groups) to facilitate the selection of the most profitable project not undertaken and less profitable projects undertaken. The difference between the benefits of each project undertaken and the one which is not undertaken is attributed to distributive benefits which are not included in CBA.

But his approach is also criticised as a more 'theoretical approach'. There is as such a room for making refinements because, the approach is based on the weights implicit in the Government's past decisions which are not accurate. It has been empirically proved that these weights do not help the decision-maker to predict precisely the welfare effects of policies. Moreover the method of assigning weights in his approach is questionable because, these weights are not independent of the number of
public projects included in his model.

A variant of Weisbrod's implicit weights approach is suggested by Krutilla and Eckstein. In their approach they use the marginal rates of taxation as the weights. They argue that marginal rate of taxation rises as income rises. Therefore, they contend that it would be appropriate for the government to assign lower weights to additional benefits to higher income groups than to low income groups. In other words gains or losses of lower income group would be weighted more heavily than the gains or losses of high income groups following their marginal rates of taxation. This approach also suffers from many drawbacks. For instance, marginal rates of taxation reflect not only the value judgements concerning the economic standard of tax-payers but also the past decisions of fiscal policy designed to affect the overall level of income. Secondly, it is wrong to presume that only some taxes (for example personal income tax) can be used for equity considerations ignoring the relevance of


other taxes (indirect taxes) in determining the economic standard of the tax payers. Therefore, it is essential to consider the incidence of the entire tax system for the assessment of weights in equity considerations. Lastly, this approach also suffers from the same limitations implicit in the approach of Weisbrod's observed weights. Pearce\textsuperscript{84} and Marglin\textsuperscript{85} have also treated this problem. According to Pearce the weights can be estimated by assessing the likely shape of the elasticity of marginal utility of income function. Marglin demonstrated that the distributional issues can be treated as constraints on the objective function. For example, in maximising efficiency benefits the decision-maker should see that the benefits accruing to a certain income group or region do not fall below a certain level. Very recently one more proposal for this weighted system has come from Azzi and Cox.\textsuperscript{86}

According to them 'equity' impact of a programme is 'a

\begin{itemize}
  \item \textsuperscript{84} D.W. Pearce: \textit{Op.cit.}, P. 30.
\end{itemize}
weighted sum of present discounted consumption changes of social units where the weights express value judgements about the divergence of the current consumption distribution from the optimal distribution*. They argue that the value judgement is an essential factor in deriving the weights.

The foregoing discussions reveal that the opinions are divided on the incorporation of distributional effects into the objective function of CBA. The methods suggested above have yet remained as proposals. Therefore, they cannot be applied by the decision-maker without being reluctant.

Conclusions:

In conclusion we can say that the CBA is not an unmixed blessing to the decision-maker. But inspite of its imperfection and deficiencies, it is now-a-days increasingly adopted as a technique or tool of public project evaluation. It undoubtedly represents an advance in many respects over the alternative approaches in the sense that it provides the decision-maker a frame of
mind to conceive the problem and explore the solutions to the objectives sought. It has definitely emerged as the most convenient and effective technique in the process of government decision-making although it has not reached the stage of unqualified acceptance.