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The Imperatives Of Social Cost—Benefit Analysis

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Abstract

Economics is the study of optimal utilization of scarce resources that have alternative uses, to satisfy the unlimited wants in the society. Cost—benefit analysis as a concept is relevant because of this dilemma of conflicting demands on scarce resources. We can define Cost-benefit analysis as a method that aims at providing criteria for ensuring the most economic use of scarce resources while identifying projects. Social cost- benefit analysis is generally used to understand the costs for society when investment is done and the benefits of that investment. We find at one end of the spectrum environmentalists, crying foul over several projects where they conclude that social costs outweigh the benefits and at the other end of the spectrum we have growth obsessed individuals, industrialists and politicians, who focus just on Gross Domestic Product numbers. So a lack of an established theoretical framework related to cost-benefit analysis creates this dichotomy. Our exploratory research was motivated with the idea of bridging the gap in the realm of Social cost-benefit analysis, an area which is still to be explored in its entirety. Here we are concerned with exploring the rules for measuring the national social profitability of intended investment activities; so we deal with Social cost—benefit analysis. The present paper aims at giving — in a nutshell — a description of Social cost—benefit analysis with the intention of giving a theoretical treatment to the subject without compromising on practical usefulness.

Keywords: Cost-benefit analysis; Perfect competition; Project execution; Social benefits; resource allocation.

1. Introduction

Resource allocation is all about optimal utilization of scarce resources. We have unlimited needs and wants in society but resources needed to satisfy these unlimited

wants are limited. Cost—benefit analysis as a concept is relevant because of this dilemma of conflicting demands on scarce resources. We can define Cost-benefit analysis as a method that aims at providing criteria for ensuring the most economic use of scarce resources while identifying investment projects. Cost-benefit analysis should help in the assessment of projects with the aim of ensuring that the benefits of the projects or investments are greater than their costs. Since demand on resources is endless and so many times there are projects competing for the same resource some projects are dropped at the inception stage itself. In making a decision as to which project should move forward and which should be dropped, cost-benefit analysis helps in setting a criteria for ensuring that only the most profitable projects and investment avenues are approved.

In case where the investment opportunity has to be analyzed only from the point of view of profits made in monetary terms we call it private profitability. We calculate it as the difference between Private/Individual or Company Cost and Revenues. The analysis becomes more complex when we think from the national or society costs and revenue perspective. In this case the term Social cost- benefit analysis is generally used to understand the costs for society when investment is done and the benefits of that investment. Here we are concerned with exploring the rules for measuring the national economic or social profitability of intended investment activities; so we deal with Social cost—benefit analysis.

2. Research Methodology

We started this research by doing a literature survey and found that crude practical applications of cost—benefit analysis were made in the absence of the availability of a thorough theoretical framework. However in the late 1950s and 1960s cost- benefit analysis attracted the attention of economic theorists. Most of these contributions to the subject were concerned with separate aspects of project appraisal, rather than with cost—benefit analysis in entirety. Our exploratory research was motivated by the yawning gap in the realm of Social cost-benefit analysis which seems to be a relatively new subject in economics, and an area that is still going through birth pangs. It should not come as a surprise, therefore, that as yet there is no general standard methodology for Social cost—benefit analysis. A major challenge that we faced while doing our desk research in the area of Social cost- benefit analysis is that there is immense diversity of opinion related to various aspects of Social cost-benefit analysis. These varied approaches of different authors leads to different and at times conflicting conclusions. So we find at one end of the spectrum environmentalists, raising a hue and cry over several projects, like building of dams, nuclear power plants, thermal power plants, mining activities, road construction etc. where they assess the social cost and conclude that the costs outweigh the benefits. At the other end of the spectrum we have growth focused individuals and organizations, industrialists and politicians who focus just on GDP numbers and believe that the social cost of these projects is negligible compared to the social benefits. So a lack of an established theoretical framework related to cost-benefit analysis creates this dichotomy and leads to different conclusions.

This research paper aims at providing a very basic framework for the application of Social cost—benefit analysis in which the assumptions made are exposed explicitly. It is impossible in this part of the study to do full justice to the many and often important contributions made on the topic by a large number of authors. To this extent the contents of the present paper no doubt contains a large number of arbitrary decisions. The present paper aims at giving — in a nutshell — a description of Social cost—benefit analysis with the intention of giving a theoretical treatment to the subject without compromising on practical usefulness. The framework for Social cost—benefit analysis presented here can correctly be described as a simple and rather straightforward approach which does not contain more than the basic elements of the method.

When we talk about project appraisal in this paper it refers only to those projects which generate goods and services which can be sold in the market, leaving out infrastructure, education, health and other sectors producing public goods. The reason for this limitation is that Social cost—benefit analysis in the context of this paper is introduced as a means of appraising investment proposals by private firms, which typically invest in projects which generate goods and services to be sold in the market, either domestically or abroad. This study needs to be given a lot more refinement through further research since the topic is vast, unexplored, and complex.

3. The Dichotomy between Social vs. Commercial Profitability of Investment Project

When we talk about cost-benefit analysis we need to understand that while there is a cost that is visible and benefits tangible or intangible also are highlighted, the social cost of a project is often not given the same amount of importance. There is often a conflict between national and commercial profitability. The basic reason for expecting the social profitability of a project to be different from its commercial profitability is a difference in the concepts of benefits. In commercial analysis, the benefits of a project are expressed in terms of profits. For social cost – benefit analysis, profits are not the ultimate aim.

When we talk about social profitability of a project we should focus on the contribution of the project in terms of fulfilling the aims of economic policy as expressed for example, in a developmental plan. The national economic aims need to be kept in mind and it could be something like an increase in GNP, a more equal income distribution of income etc. In this paper let us restrict our analysis to only a singular aim of economic policy: an increase in GNP. With this assumption as our base we need to ask the question whether there is a difference in profitability measured in terms of profits and profitability measured in terms of contribution to GNP. In classical economic theory it is assumed that there is no such difference because classical theory postulates that by maximizing profits one also maximizes the contribution to GNP. This assumption can be true only if the following conditions are fulfilled. These conditions are:

A. A perfectly competition market
B. An absence of external effects

C. No public goods, that is, all goods and services can be sold in the market

The real world is more complex than these assumptions. The strict conditions necessary for making profit maximization equal to income maximization are not fulfilled. First of all, the assumption of perfect competition on all markets is not realistic. Distortions are a part and parcel of pricing for factors of production and for goods and services because of which market prices become an insufficient indication of the real scarcities. In the case of structural unemployment the market price for unskilled labor does not reflect the marginal productivity of labor. Countries with severe balance of payments problems may ration foreign exchange by means of government interference in the foreign exchange market, leading to foreign exchange rates different from those which would prevail in a situation of full competition. As a consequence of the price distortions for factors of production the market prices for goods and service will further price distortion because of indirect taxes and subsidies, monopolistic tendencies and restrictive practices. As far as the second point goes we all know that external effects do play a role because of which private profitability is not the right judge for social profitability.

Next, a number of goods and services do not have a market price, because they are public goods, meaning that the consumption by one economic subject does not impact the consumption of others e.g. highways, parks etc. These public goods cannot be evaluated like projects which produce goods and services which are to be sold in the market. They are of importance to the extent that these public goods are inputs for the project to be appraised and the social cost of providing the public goods is not reflected in the commercial cost of production and so leads to difference between commercial and social profitability. We can say that commercial profitability is a poor indicator of social profitability, even if there is just one aim of economic policy, an increase in GNP. The differences between social and commercial profitability will even become larger if more aims of economic policy, and thus more types of benefits, are taken into account.

4. The Project Execution Stage

We can start by trying to understand what happens when a project is executed. This will help us in understanding the factors to be taken into account by the criterion to be applied in project appraisal. Here we are not discussing project preparation stage since that is not directly relevant to our research. In the project implementation stage we start procuring machines, raw materials, tools and components, hiring human resources , construction, imports if required , procurement of land etc. To procure all these things we need finance since money is the life blood of any project or business. To harness these financial resources we have two avenues- domestic savings or foreign aid. If we talk about domestic savings we know there is a trade -off between domestic savings and domestic consumption. An increase in savings may lead to a reduction in consumption or a cut back on other investment opportunities. The entire cycle of investment is undertaken under the premise that all the expenses or costs that have been incurred in the project will be recovered when the project churns out goods

and services for the market. When we use the term expenses or costs in this context we are talking about not just the money invested which is the financial cost to the firm but also the national economic costs because during the investment period the project places demand on scarce resources, savings, foreign exchange, labor and land, which in the absence of the project could have been utilized for other purposes. All these resources have an opportunity cost, that is, if not used for the current purpose in the project they could have been used for the next best alternative. So cost of the project is not just the direct cost but also the opportunity cost – next best alternative forgone due to resource always being scarce vis-à-vis wants and needs in society.

In the second stage, the project starts producing output to be sold in the market. Normally one would expect that at the beginning the output is well below rated capacity, but increasing rapidly to a level which is in accordance with full capacity utilization. In this period the gross benefits of the project dominate the picture. These benefits consist of the value of sales in the case of a private analysis. For a socio-economic appraisal, sales may not be the appropriate yardstick.

5. Gross Benefits and Time Period

Nevertheless, output is to be treated here as the gross benefit, as it makes available, directly or indirectly, scarce resources for additional consumption and investment. To reap these benefits, costs have to be incurred for the procurement of raw materials and other supplies – energy, transportation facilities and for covering labor expenditure and sales expenditure. These costs have to be deducted from the gross benefits to obtain the net benefits of the project in a given year. If the project is a sound one the net benefits in a given year will normally be positive.

So far we have not paid attention to time period over which benefits accrue. There is, of course, no fixed operation period for investment projects in general. This will be different from project to project. In certain sectors capital equipment may not have a long life as it becomes obsolete due to technical progress, for other industries the life of the project will depend on the technical wear and tear, whereas for still other projects the operation period will depend on the time which mineral resources are depleted. Not only is this difficult to estimate for each individual project, the uncertainty in estimating the life of a project has sometimes given rise to the practice of adding depreciation allowances to the operation costs of a project, and treating the life of the project as infinite, by tactfully assuming that depreciation allowances are immediately reinvested in the project. This practice is not correct, since depreciation allowances are determined for fiscal reasons only and do not show very much of a relationship with the expected lifetime of a project. As such, giving projects an infinite life through the gimmick of deducting depreciation allowances is harmful rather than helpful in tracing the effects of a project over time. There would seem to be no alternative but to estimate the time period over which benefits accrue as carefully as possible, even if this means that uncertainty plays a significant role.

6. Pay-back Period

A criterion often applied, especially by private enterprises is the so—called recoupment period or pay—back period. In its simplest version this criterion estimates the number of years which are needed to back, in the form of net benefits, the investment outlays made for the project. Applying this criterion of the decision rule is: choose from all potential projects those which show the shortest recoupment period. Under certain specific circumstances this decision rule may give the correct answers. In general, the criterion is inadequate since it gives no weight to benefits accruing after the recoupment. A criterion which does not have these shortcomings is the present value criterion, in which all future benefits and costs are covered through discounting into comparable units.

The decision rule for this criterion is: given the rate of discount, execute all projects with a positive present value. The problem with this criterion is, of course, the determination of the discount rate, which is, not at all an easy affair. It is for this reason that it is sometimes suggested to change the criterion into the internal rate of return criterion. For this criterion, the essence is that discount rate has to be determined for which present value of the future of net benefits is zero. The decision rule then becomes: from all possible projects choose those projects with the higher internal rate of return.

7. Social Benefit Costs

An examination of the economic policy of a country will help us understand the national economic objectives of the country we wish to evaluate. A majority of times it is seen that the development plan of the country will explicitly state the objectives of economic policy. We can then safely say that benefits in a national economic sense can be defined as contributions to the objectives of economic policy. Keeping this in mind we have grouped the potential benefits into four categories:

A. Increase in Consumption benefit
B. Creating egalitarian society by improving income distribution
C. Creating Employment
D. Market Value vs. Social Benefits

These four benefits need not apply in all circumstances, whether they apply in a particular country depends on what policy makers deem important.

7.1 Increase in Consumption benefit

We find that the major aim of any economic policy is to maximize Gross National Product (GNP) by increasing its growth rate. However often we forget that maximizing GNP should not be an end in itself when we talk about social benefits, rather the aim should be maximizing consumption. The trickle-down theory of growth has been debated time and again and it has been seen that increase in GNP alone does not lead to poverty alleviation because growth does not automatically trickle –down to the poor. It has been observed in several developing countries including India that GNP growth is not all the times accompanied with increase in consumption level of

the poor and marginalized sections. It is for this reason that the concept "inclusive growth" is so much talked about now-a –days. The increase in income levels is not to be pursued for its own sake, but for the purpose of satisfying the more fundamental aim of increasing consumption levels. As such the proper benefits to be taken into account in social cost-benefit analysis should be the contribution of a project to consumption. Benefits should be expressed in terms of contribution to consumption not in terms of increase in GNP because of the sub—optimal level of consumption in developing countries. Higher weight should be attached to consumption since GNP is not the appropriate yardstick to measure social benefit. Nevertheless, one may have doubts as to whether this should be taken into account at a project level for theoretical as well as practical reasons. At theoretical level one may question whether it is correct to use project appraisal as an instrument to pursue the macro- economic aims. Also we should not lose sight of the fact that giving of weights unavoidably leads to value judgments since there are no objective ways of finding the appropriate weights. Although value judgments do play an important role in social cost—benefit analysis, there is some merit in restricting the impact of subjective value judgments to minimal proportions.

In the second place, there is the question of measurement of savings and consumption out of the income created by a project- This is difficult enough if all market prices reflect equilibrium prices, as one has to trace which social groups, or even persons, benefit from the income generated by a project. If market prices are not a fair indication of the real scarcity value, it becomes almost impossible to estimate which part of the income generated by the project is consumed and which part is saved, as the income generated will be measured at accounting prices, whereas consumption and savings decisions are determined by the income accruing in the form of profits, wages and taxes at market prices. To translate the one into the other is an extremely complex affair, and may well be impossible for practical work. For the above mentioned reasons contribution to GNP is used as a yardstick for measuring the benefits of a project and contribution to GNP has to be considered as a proxy for the contribution to consumption.

7.2 Creating egalitarian society by improving income distribution

An egalitarian society is always a better society. To create this egalitarian society any project or development scheme has to see that increase in income and better income distribution go hand in hand. Under a better income distribution, one has to understand a more equal income distribution either in a personal sense, or in a regional sense. The rationale for including the aim of a more equal income distribution in the aims of economic policy is that the utility of an additional unit of income is not dependent on the absolute income level. For a poor person, an addition to income of, say Rs.1000 has a higher value than the same increase in income for a rich person. Government objectives normally reflect this by stating that it intends to follow policies leading to a more equal income distribution, where a higher value may be given to income creation in backward regions. The challenge here is to find the appropriate weights to be given to the aim of a more equal income distribution. Here also like in any in socio-economic project analysis, value judgments are involved and

this is the domain of the policy makers. Policy makers need to take the help of economists in assigning different weights to the income of different groups.

7.3 Creating Employment

In the literature, no consensus exists as to whether employment benefits are to be included as a special item in the list of benefits to be taken into account in project appraisal. There are experts who strongly oppose the inclusion of employment benefits giving the argument that employment is an instrument for realizing the income benefits and the income distribution benefits and it is not an end in itself. However like in any intellectual debate there is the other end of the spectrum where experts argue that employment is an aim of economic policy by itself. No doubt, the employment issue is interrelated with the objectives of a higher income and a better income distribution, but more employment, even apart from its effects on income and income distribution, is a good thing in itself as it provides livelihood and money to the employed. This may be argued by government, it may also be argued by individual. If to be without employment is to be translated as having leisure time then it should not be treated as a separate aim. If, on the other hand, unemployment implies that persons willing to work are not able to find employment, and face acute poverty and frustration then the scenario changes. In this case, employment has to be added to the list of benefits.

7.4 Market Value vs. Social Benefits

Policy makers may attach specific values to particular goods and services, arguing that these items are from a social point of view more valuable than their prices indicate. This is what can be called the market value vs. social benefits argument or value in use vs. value in exchange. This argument is not in all cases a correct one, and at times creates a false justification for non-justifiable projects. This argument should, therefore, not be too easily accepted. In a number of cases, however, the argument may be correct. Education, for instance, may be more valuable to society than is reflected in the costs of providing it even if cost data are corrected for market imperfections.

8. National Economic Costs

National economic costs are basically negative contribution to the aims of economic policy. In other words, it means what are the benefits forgone because of the project. This refers to operating as well as investment costs, the idea being that without the project, the expenditure items would have been available for satisfying, other demands, for example, consumption demand.

9. Conclusion

In the public sector, the utility is self -evident. The social benefits of units like refineries, steel plants, public utilities, etc., are to be examined and explored in parameters that are different from private sector projects. So Cost-benefit analysis is

imperative for the public sector, particularly the utilities. However this concept has tremendous utility even for the private sector where profitability is the sole motive. In the private sector, Cost-benefit analysis is useful to help the Government in arriving at a decision regarding which projects to facilitate through its fiscal and monetary policies and which project to discourage. Some parties have done such analysis some time back e-g. A Multinational firm when it applied for entry into the fisheries department prepared a Cost-benefit analysis report in collaboration with a State Government as part of the project. Cost Benefit analysis can be used as an instrument to push the government in giving concessions and facilitate funding for such projects at easier terms. Therefore, Cost-benefit analysis is now assuming important dimensions even for the private sector which the well informed executive call ill afford to neglect.

With the given list of potential benefits of projects to be taken into account, the question arises of how to combine these benefits in such a way that they can be measured objectively. For practical work, what should be done is to ask the policy makers what weight they give to one type of benefits in terms of the other type of benefit. In other words, the question is how much income, policy makers are willing to give up in order to provide e.g. one more unit of employment. For other benefits, the same procedure should be applied and consequently can be added up. There could be a common unit of account in which all net benefits are to be measured in order to make them comparable. All this requires further research and a more thorough research at the level of government, policy makers, social scientists, and economists.

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