

7.0 COST BENEFIT ANALYSIS

7.1 Ex Ante Analysis

The implementation of any project will lower the amount of resources available to the rest of the economy and will raise the supply of goods and services. The method for the identification of costs and benefits of the project consists in comparing the availability of resources and products "with" and "without" the project. Within this context, there is general agreement about the nature of cost benefit analysis. It is that branch of economic analysis which addresses itself to the following three basic questions in relation to the investment of resources to achieve value for money:

- (a) why invest the resources at all, as opposed to not doing so (with or without)?;
- (b) why invest them in that particular way (as opposed to possible options)?
- (c) why do it now (taking into account discounting)?

These questions could be reasonably well answered in relation to investment of resources by the private sector, because the decision taker would be concerned only with the costs and benefits falling directly on him (that is not externalities) and could obtain numerical answers since both the costs and benefits in question could be valued in the market. But answers could not so readily be obtained for a large amount of public sector investments for a variety of well known reasons: the output is not bought and sold in the market and therefore has no market valuation; where associated with government, the decision takers are also interested in repercussions from particular projects onto others (road and rail, for example); decision takers need to take account of externalities (for example, environmental pollution).

It was the need to show value for money in public expenditure, while reflecting these wider concerns, which initiated the search for relevant economic analysis in the public sector, giving rise to the phenomenal growth in cost benefit literature from the 1930's (starting with water resources and highways).{1} Plans or projects had to be evaluated with a view to their foreseeable net benefit for different groups or regions in a society. Consequently, measurement of costs, measurement of benefit and assessment of distributive effects were necessary. By now the method and approach is relatively uniformly applied the world over to a wide array of public sector investments (education, health, etc) and in Italy are familiar in the studies referred to above.{2} In the method there are three subdivisions. In the benefit/cost equation proper, both cost and benefit are

variables. In cost minimisation the benefits are constant. In cost effectiveness, the costs are constant.

The 1960's and 1970's showed a strong dominance of economic evaluation tools in public planning (for example, cost-benefit analysis, cost-effectiveness analysis). A major stimulus to the use of such tools was given by the United Nations Industrial Development Organisation, the Organisation for Economic Co-operation and Development and the World Bank. It was a widely held belief that a systematic application of rigorous economic thinking in evaluating and selecting public projects or plans would be a major instrument in improving the performance of the public sector.^{3} In all these applications the basic principles and methodology are much the same, although there are significant variations. A recent authoritative view on the standard method is summarised as follows:^{4}

- "(1) Measuring the values of outputs (benefits) and inputs (costs) with shadow prices;
- (2) Using border prices as shadow prices for traded inputs and outputs or, in cases where demand or supply is not independent of price, the marginal revenue or cost to the country in foreign exchange, as a first approximation;
- (3) Where possible, using costs, themselves measured at shadow prices, as shadow prices for non-traded inputs;
- (4) Using conversion factors, estimated separately for a number of different broad categories of inputs and outputs, to calculate shadow prices from market prices for most minor inputs and outputs.
- (5) In particular, using as shadow wage rates (abbreviated SWR) market wage rates discounted by a conversion factor estimated from an overall study of the economy, and depending in particular on a judgement that public income is, at the margin, more valuable than private income;
- (6) In cases where no other rule is applicable, using a standard conversion factor (abbreviated SCF), to deduce the shadow price from the market price, to be estimated by comparison of (domestic) market prices to broader prices for traded goods, and other for which a sound estimate of the shadow price is available;
- (7) Estimating the private and public parts of the net (social) costs and income of the project, so that private income and costs could be discounted relative to public income and costs, and giving a low weight to private profit income;

Basing the shadow prices used upon forecasts of border prices and market prices, not usually on their current values;

Discounting net social profits so calculated by means of an accounting rate of interest (abbreviated ARI) high (or low) enough to be expected to ration investment projects in the whole economy to the funds available - a rate that could well vary over time, but in no case using a discount rate less than the rate available for investment in international capital markets;

Allowing for uncertainty only to the extent that the profitability of the project was expected to be correlated with the general state of economy;

In the case of large projects, allowing for changes in prices brought about by their introduction, and estimating the incremental value of output and input by "surplus" calculations;

Converting all external effects of the project to numerical terms, by making some kind of estimate of the cost or value in terms of public income, and including them directly in the calculation of the present social value of the project".

From the above exposition it is clear that in the past decades considerable attention has been given to the economic underpinning of project appraisal. The critical problem inherent in this approach is however the fact that there is often a wide gap between the assumptions or assessments inherent in the use of shadow prices and the information available from real-world phenomena.{5}

7.2 Ex Post Analysis

In the evaluation of projects the analyst is concerned with a large number of uncertainties, as for example the assessment of costs and after-use values. In conservation projects particular uncertainties arise: the marketability of the cultural heritage in its improved use in the contemporary scene; modes of construction appropriate to restoration; availability of skills of craftsmen; success in protecting the cultural value of buildings during works of restoration, etc.

For these the analyst must make assumptions and estimates as inputs to the evaluation exercise. By definition these are affected by uncertainty. The only way of obtaining greater certainty is to learn from the experience. But in order to do so, it is necessary to adopt some rigour in the ex post evaluation exercise. This involves monitoring experience in projects by

reference to the documentation of the ex ante evaluation, so that the direct comparison can be made as a basis for improvement in methods and techniques.