COST-BENEFIT ANALYSIS - TOOL FOR ALLOCATION OF FINANCIAL RESOURCES FOR MAJOR PROJECTS

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Abstract:
The judicious selection of investment projects, at the micro and macro level, with recognition of resource constraints and complementary involvement of the private sector, will lead to sustained economic growth, equitable development, poverty reduction and private sector growth. Cost-Benefit Analysis (CBA) estimates and totals up the equivalent money value of the benefits and costs to the community of projects to establish whether they are worthwhile. This research enterprise proposes the study of the advantages of cost-benefit analysis and identify the several major principles that collectively describe the assumption base, objectives, analytical tasks, and merits of this important project assessment methodology.

Keywords: *Cost Benefit Analysis, projects, financial resources*

JEL classification: *D61, H43, G11*

1. Considerations on the cost-benefit analysis

Judicious selection of investment projects at the micro level, with recognition of resource constraints and complementary involvement of the private sector, will lead to sustained economic growth, equitable development, poverty reduction and private sector growth.

ACB is an economic and ecological analysis method emerged in the 19th century in the U.S.A. and assesses ***the environmental effects*** (ecological, social, etc.) of the investment projects (especially those in the public domain) in constructions, industry, transports, tourism, or agriculture.

The cost-benefit analysis should not be translated ad litteram (the income-cost analysis, allowing for the selection of the optimum project version for purely economic reasons), it means instead the ***economic*** ratio (economic efforts - costs), the ***ecological*** one (ecological effects - damage / improvement of the natural environment) and ***social*** (the social effects concerning the creation and disappearance of jobs, the protection of human health, the improvement of the living standard, the benefits resulted from people's education, training, or retraining), by also taking into account the non-monetary elements derived from the impact on the environment, not only the monetary elements in a traditional sense. Both methods (the cost-benefit analysis and the income-cost analysis) have, however, common indicators (the Internal Rate of Return - IRR, the Net Present Value - NPV, the Income-Cost ratio).

The Cost-Benefit Analysis (CBA) is a very useful tool for making decisions on the allocation of financial resources for investments financed from public or international funds and help ensure the efficient use of investment resources in the sectors where benefits are difficult to assess. There is a wide category of projects whose benefits either lack a market price easily accessible, or are not easily quantifiable in financial terms. If the project benefits are measured in a non-monetary unit, the NAV criterion cannot be used to decide whether a project is financed or not. Although it is mandatory for major projects, ACB does not provide useful and accurate information to make the decision to finance or reject a project in all cases, especially for small projects,

that have a social role and it is necessary to limit the usage of this tool following a careful analysis. It is important to take into account, for the selection of the projects, several alternative assessment techniques in order to obtain the information required to support the decision to finance a project or not, such as the multi-criteria analysis and the cost-effectiveness analysis.

2. Some issues related to the achievement of cost-benefit analysis

The Cost-Benefit Analysis (CBA) is a financial analysis tool, by which the beneficiary of the investment proves the necessity of the investment from non-reimbursable funds, and of an economic analysis, the latter being reflected in the economic and social benefits generated by the project for the society.

In the context of financing investment projects from financial resources from the EU budget, Regulation no. 1083/2006/EC of the European Council provides the application of CBA for projects with a total value of more than 50 million euros, named "major projects". The requirement to make a Cost-Benefit Analysis for major projects, set at European level, was undertaken and applied at national level in the EU member states, in the candidate countries and in the case of non-major projects (below 50 million euros).

Making a cost-benefit analysis for major projects in agriculture (financed from European funds, etc.) is required for the following two reasons [3]:

- First of all, it must be proved that the project is economically desirable and contributes to the fulfilment of the objectives of the European national and regional policy (if the economic net present value of the project (ENPV) is positive, then the company (region/country) may give up the project because its benefits exceed its costs. Consequently, the project should receive support from the Funds and should be co-financed if necessary);
- secondly, proof must be made of the fact that co-financiers' contribution is required (the national authorities and the European funds) so that the project may be financially viable (the financial net present value of the investment minus the contribution of the Funds (FNPV/C) is negative then the project can be co-financed; the EU subsidy should not exceed the monetary value which makes the project profitable, in order to avoid generating an over-financing case).

The stages proposed for making a Cost-Benefit Analysis, in the context of the preparation of the investment projects are as follows (Figure 1) [5]:

- *Identifying investments and defining objectives* (the project objectives should be logically connected to the investment and consistent with the policy or programme priorities.);
- *Identifying options* (for example: the location of a production plant in area A, nearer to the end markets, versus area B, nearer to the suppliers or energy efficiency improvements rather than (or in addition to) the construction of new power plants); *analysing options to compare the situations with and without the project* (a baseline scenario, that does not mean that operations of an existing service will be stopped, but simply that they will go on without additional capital expenditures or a "do-minimum" project, who incurring certain investment outlays, for example for partial modernisation of an existing infrastructure, beyond the current operational and maintenance costs). Because, in some cases the compliance investment costs can be substantial, there may be better alternatives (for example shifting from rail to "sea highways"). *Feasibility analysis* identifying the potential constraints and related solutions with respect to technical, economic, regulatory and managerial aspects.

- Financial analysis uses the project cash flow forecasts to calculate suitable net return indicators: the Financial Net Present Value (FNPV) and the Financial Internal Rate of Return (FRR), respectively in terms of return on the investment cost, FNPV(C) and FRR(C), and return on national capital, FNPV(K) and FRR(K);

$$\text{FNPV} = \sum_{t=0}^{n} a_t S_t = \frac{S_0}{(1+i)^0} + \frac{S_1}{(1+i)^1} + \ldots + \frac{S_n}{(1+i)^n}$$

St = the balance of cash flow at time *t*
at = the financial discount factor chosen for discounting at time *t*

FRR is defined as the discount rate that produces a zero FNPV

- Economic analysis - appraises the project's contribution to the economic welfare of the region or country using use the accounting shadow prices, based on the social opportunity cost, instead of observed distorted prices;
- Sensitivity analysis allows the determination of the 'critical' variables or parameters of the model and it is carried out by varying one element at a time and determining the effect of that change on IRR or NPV.;
- Risk analysis (for exemple, Monte Carlo method);
- Presentation of the results.

CBA is used to assess the importance of an investment project in agriculture for the EU regional policy. Costs and benefits should be evaluated on a differential basis, taking into account the difference between the scenario of the project and an alternative scenario outside the project.

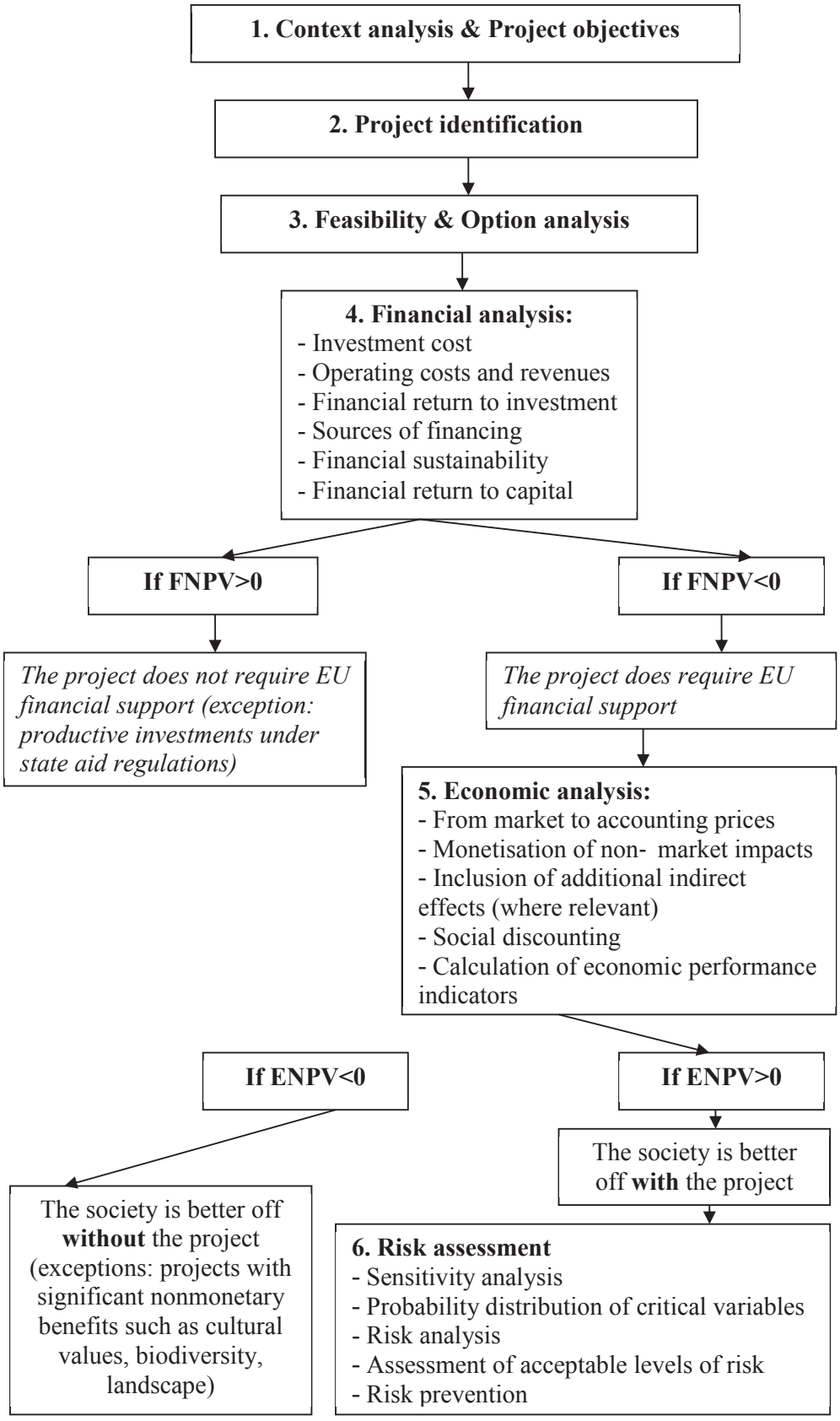
The impact is assessed according to certain predetermined objectives. Through the assessment of a project according to the macroeconomic indicators, CBA can assess the level of compliance with certain specific macroeconomic indicators. In the context of the regional policy,

The level of analysis used within CBA must be defined in relation with the society in which the project has a relevant impact. Costs and benefits can be borne and cumulated at various geographic levels, therefore it is necessary to make a decision concerning the costs and benefits that must be taken into account. This usually depends on the size and scope of the project. Impacts can be taken into account at Se local, regional, national and even at EU level.

In the assessment of the possible impacts of a project, analysts always face uncertainties. This aspect must be taken into account and treated accordingly in the CBA.

The risk assessment exercise is an essential part of a comprehensive analysis, because it allows a project developer to have a better understanding of the manner in which assessed impacts can change if certain key variables of the project prove to be different from the expected ones. A detailed analysis of the risk is the basis of a correct risk management analysis, which in its turn is reflected in the structure of the project.

Figure 1. The stages for Cost-Benefit Analysis



3. Conclusions

Cost-benefit analysis can be undertaken in other different ways. One of this ways is related to the consequences of economic globalization (the implications of economic theory for economic benefits and costs when market extension occurs). Some authors do this in relation to the growth in the available variety of commodities associated with growing globalization [4] or in relation to policies designed to reduce the rate of global warming [7]; a process that has been accelerated by growing globalization.

Nevertheless, quantitative findings have to be interpreted cautiously because their adequacy depends on the underlying adequacy of the theory that underpins them and the assumptions employed to make the data analysis tractable.

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