

EVALUATION OF COST-BENEFIT ANALYSIS IN BANK PROJECTS

Approach Paper

INTRODUCTION

1. The proposed evaluation will seek to assess the extent to which the Board and Bank management can be confident that benefits will exceed costs in World Bank-financed projects based on information in project appraisal documents. To this end the evaluation will review issues pertaining to the practice of cost-benefit analysis (CBA)¹ of investment projects at the Bank, including the quality of information, analysis and supporting evidence regarding costs and benefits of projects, and the weight given to cost-benefit information and analysis in decision making. Although not often discussed today, the criterion that net benefits must be positive remains fundamental to justify investments in the public sector. Bank policy (OP/BP 10.04) states that no investment projects are exempt from a net-benefit test: *“For every investment project, Bank staff conduct economic analysis to determine whether the project creates more net benefits to the economy than other mutually exclusive options...”*² If net benefits are not positive, the country is likely burdened with debt greater in value than the benefits derived. Or, in the case of grant financing, there are likely to be better alternative uses of the funds³.

2. Beyond the basic criterion that net benefits should be positive, Bank Policy in OP/BP 10.04 further states that:

- a. Benefits and costs should be measured against the situation without the project.
- b. All projects should be compared against alternatives including the alternative of doing nothing.
- c. If a project is expected to generate benefits in non-monetary terms the analysis has to show that the project represents the least cost way of attaining the stated objectives.
- d. Sustainability must be assessed, and this includes analysis of whether stakeholders have the incentives to implement the project successfully.
- e. Analysis should consider the sources, magnitude, and effects of the risks associated with a project by taking into account the possible range in the values of the

¹ Cost-benefit analysis as used here includes, in principle, all relevant benefit flows, including those for which quantitative estimates can only be made with a high degree of uncertainty. It implies an accompanying broader economic analysis of the constraints, market failures, and counterfactual situation, and includes cost effectiveness analysis, which is considered here a subset of cost-benefit analysis.

² World Bank Operations Manual, section 10.04, September 1994.

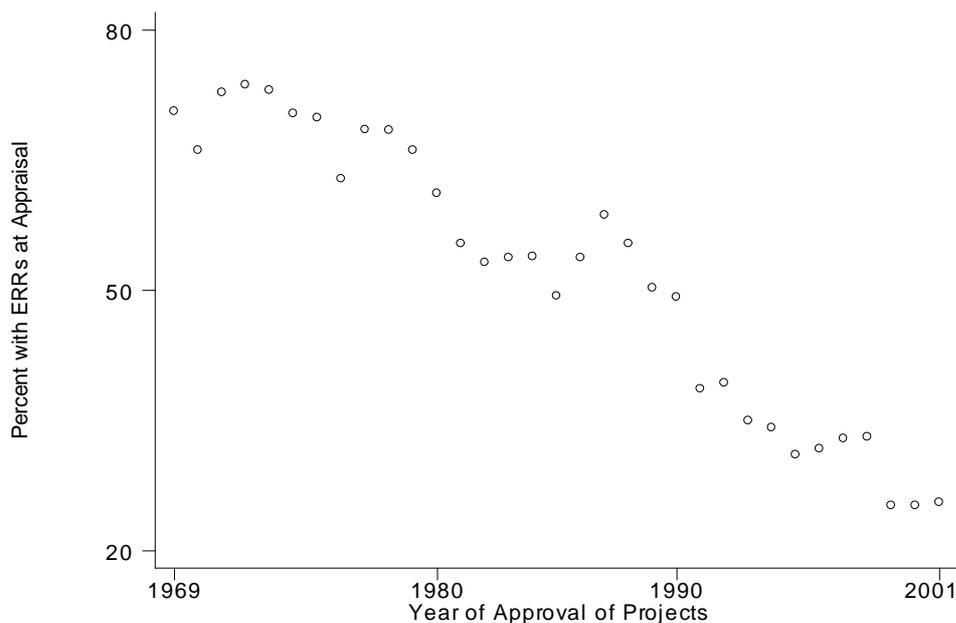
³ IFC and MIGA are not included in this analysis, although illustrations will highlight aspects of economic analysis in their projects.

basic variables and assessing the robustness of the project outcomes with respect to changes in these values.

- f. The economic analysis should examine the consistency with the Bank's poverty reduction strategy.
 - g. The economic evaluation of Bank-financed projects should take into account any domestic or cross-border externalities.
3. In light of this policy, it is potentially significant that the use of CBA appears to be declining, at least as indicated by the percentage of investment operations that contain an estimate of the economic rate of return in the appraisal document. This percentage has declined from a high of nearly 70 percent during the 1970s to approximately 30 percent in the early 2000s (see Figure 1).

Figure 1. Percentage of Projects that Reported Economic Rate of Return Estimates at the Start of the Project, Displayed by the Fiscal Year in which the Projects were approved

(Investment Loans and Credits)



Source: World Bank Business Warehouse database, April 2009.

4. Given the possible contradiction between Bank policy and the apparent decline in the use of CBA, the evaluative questions are the following:
- a. First, what is driving this decline? Does it stem from a change in the composition of the projects that are being financed, or other factors?

- b. Second, has the quality of the cost-benefit analysis, as measured primarily by fidelity to Bank policy above, changed since the reviews carried out in the mid 1990's (cited in paragraph 9), and is the empirical accuracy of the estimates of net benefits at an acceptable level?
 - c. Third, is the weight currently given to cost-benefit criteria in decision making appropriate? If this has changed, what drives such changes? Should Bank practice be changed?
5. For many, the issue is not so much whether cost-benefit analysis should be performed, but what kind of cost-benefit analysis; how it varies by intervention; and what constitutes acceptable standards. Also, although the costs of CBA are likely to be dwarfed by the costs of negative present value projects, a CBA effort itself will have costs and benefits. A position to do the best analysis always and everywhere may not be the right answer when there are time and resource costs involved. Therefore, the evaluation will also seek to determine whether there are acceptable standards that can be tailored for important types of investment projects, referring both to the analysis performed and the information required to document net benefits to decision makers and outside stakeholders. The evaluation will also address who should be carrying out such analysis (Bank, clients, both).

APPARENT DECLINE IN COST-BENEFIT INFORMATION

6. The evaluation will examine the trends and what factors may be driving the apparent decline in the practice of cost-benefit analysis as revealed by Figure 1. Does the decline stem from a change in the composition of the projects that are being financed, or other factors? The evaluation will examine rates of return estimates for different types of projects, by sectors, activities within sectors, and countries. It will determine the impact on the use of cost-benefit analyses of changes in the composition of Bank-financed projects over time, and it will address any changes in Bank policies and approaches that may be relevant in explaining the trends.
7. The evaluation will also analyze the extent to which the feasibility or desirability of cost-benefit analysis varies by type of operation, and whether the practice of Bank development assistance is changing in ways that affect the applicability of cost-benefit analysis. Sometimes mentioned in this regard is the shift to non-earmarked forms of assistance, such as budget support or sector-wide assistance, the increasing attention to institutional reform or complex interventions, and shifts away from infrastructure toward social sector projects.

QUALITY OF ANALYSIS

8. The quality of economic analysis in Bank-supported projects will be assessed against the standards set out in Bank policy OP/BP 10.04, described in paragraph 2. The assessment will be performed on both new and completed projects using samples of investment projects that entered and projects that exited the portfolio in calendar years 2007 and 2008.

9. The assessment of analysis in new projects will examine appraisal reports and rate the quality of analysis for the elements of Bank policy. The quality of economic analysis in appraisal reports was previously assessed in the early and mid-1990s in a series of reports called the ECON reports. The first of these was a background paper for a broader review of portfolio quality in 1992 prompted by the decline in the percentage of satisfactory projects⁴. This first ECON report focused on whether and how improved economic analysis at the appraisal stage could raise the eventual outcome ratings. The review stated that “The principal finding is that the Bank is not effectively using economic analysis as a tool of project design, appraisal and supervision.” Subsequent reports, produced jointly by the then Operations Policy Department and Operations Evaluation Department, rated the quality of analysis at appraisal in fiscal years 1993-1997 and reached broadly similar conclusions. The reports recommended enhancement of the oversight role of chief economists, strengthening the selection of peer reviewers, and training of task managers.

10. There is a high degree of overlap between the criteria used in the ECON assessments and the elements of Bank policy outlined in paragraph 2. This evaluation will use a similar methodology, which is appropriate for this evaluation and will also permit determining the degree to which the quality of analysis has changed since then. The assessment of the quality of analysis for projects at closing will be consistent with the assessment at entry, but will go beyond the ECON criteria and also assess the quality of the final cost-benefit assessment (which is impossible for an assessment at appraisal and therefore could not have been part of the ECON criteria)⁵.

11. The sample for the assessments will be selected randomly but, to avoid low coverage of a major sector, will ensure that a minimum of 20 percent of projects in any given sector are chosen. The eleven major sectors are Agriculture, Education, Energy, Environment, Financial and Private Sector Development, Health, Nutrition and Population, Public Sector Governance, Social Protection and Transport, Urban development and Water. Sample sizes will be increased if deemed necessary to draw robust conclusions.

INTEGRITY OF DATA

12. An important part of analysis is the accuracy and integrity of the data used in the cost-benefit estimates. Are the key parameters used to produce the estimated cost and benefits flows of an investment empirically well grounded, eg. yields, adoption rates, operating costs?

13. This evaluation will examine the cost-benefit numbers used in appraisal reports and reported in completion reports as well as the process used to generate the estimates. Sources will include, in addition to the previously mentioned examination of appraisal and completion reports, empirical analysis of IEG’s data base of evaluated projects and reported economic rates of returns, and interviews with staff and experts conducting economic analysis of projects.

⁴ The portfolio quality review has since come to be known as the Wapenhans Report, after the vice president who led the effort.

⁵ The differences between the items in Bank policy in OP/BP 10.04, and the evaluative criteria in the ECON reports are not major. These will be listed and clarified in the evaluation.

14. The evaluation will assess the plausibility of the reported economic rates of return of projects. The evaluation will review basic facts about the ex-ante and ex-post rates of return reported by Bank projects over the past 30 years, using the IEG database (a total of 3,487 rates of return reported). Questions to be addressed include the relation between ERRs at entry and exit, and whether the relation varied by sector or project type. What explains why certain projects report ERR's and other do not? Were there significant trends or patterns over time that require explanation or raise further questions? Are the reported rates of return broadly consistent with other measures of project performance such as IEG performance ratings?

15. Regarding the process of assessing costs and benefits, the focus will be on who does the analysis and under what incentives. Does the process minimize the role of personal opinion by the analyst through, for example, use of auditing or spot checks of quantitative assumptions, or checking key parameters against norms established in other estimates? To what extent is there peer review?

16. Regarding the cost-benefit analysis at entry, key questions include whether objective data is used to the maximum extent possible; whether information from earlier closed projects is used to assess costs and benefits of new projects; to what extent estimates of costs and benefits are consistent within a sector for a given country; to what extent discount rates are consistent within a country for a given year; to what extent are deviations from consistency well justified?

17. Regarding the cost-benefit analysis at closing, key questions include the extent to which the estimates accurately reflect what happened in the project. Has there been effective collection and use of data? Has the analysis been consistent with that at entry? Has the analysis been done sufficiently long after closing to address sustainability of benefit flows?

WEIGHT IN DECISIONS

18. Ultimately, the effectiveness of CBA hinges on the degree to which it influences project design and investment decisions. Key decisions in the life of a project range from the go/no-go decision and design decisions at appraisal to possible restructuring and cancellation decisions during implementation. The evaluation will examine the weight CBA analysis is given at various decision points, relying on interviews with staff involved in decisions and in the economic analysis. Useful information is expected to include when cost-benefit information is available – before or after the decision nodes - who reviews the cost-benefit information, and the degree to which alternatives are presented to decision-makers. The evaluation will also consider the fact that CBA information is more useful for some of these decisions than others – arguably it is most important for the go/no-go decision.

19. Possible reasons for the apparently declining weight given to CBA criteria in decisions include the changing composition of Bank operations, a lack of confidence in the methodology, or a lack of knowledge by Bank staff. Inevitably, the effective weight given to any criteria in decisions is in part a function of the decision maker's views of the merits of the criteria, in relation to other factors, such as pressure to lend, meeting lending targets, etc. The evaluation will draw on interviews and surveys to characterize staff views on CBA. Broadly speaking, proponents of greater use of CBA point to the pedagogical role it can play in focusing thinking, forcing staff to

be specific, and guarding against self-interest and advocacy in project selection, as well as the main purpose to guide efficient direction of resources and project selection. Detractors stress uncertainties in the methodology and underlying assumptions and tend to believe that CBA is narrow and underestimates benefits. A further criticism is that CBA can divert attention from macroeconomic or institutional issues and encourage an excessively project-based discussion of issues, or simply cost too much. The evaluation will summarize and assess staff views on these questions.

RECOMMENDATIONS

20. The evaluation is expected to identify areas of strength and weaknesses in the Bank's use of CBA, with appropriate recommendations. An important overall issue will be the extent to which the findings warrant revisions to Bank policies or practices regarding economic project analysis, collection of data or use of CBA in decision-making with the goal of supporting better project outcomes.

21. The evaluation will also attempt to identify ways in which CBA might differ by kind of project, and how standards or required analysis could differ across sectors. This would refer both to the analysis to be performed and the information required to document net benefits to decision makers and outside stakeholders. The section will take into account the practical constraints in applying CBA.

SUMMARY OF SOURCES OF INFORMATION

22. The analysis will rely on information from the following sources.

- For the analysis of the quality of current economic analysis in Bank projects and how it has changed over time the sample will cover at least 20 percent of investment projects approved in 2007-2008, and a similar sample of projects closed in this period and to the earlier ECON analysis (paragraph 9). This information will be used in the section evaluating the quality of analysis at appraisal in Bank projects.
- For the statistical analysis of rate of return estimates reported in completion reports, data from Business Warehouse, ICR reports, IEG's ICR reviews and PPAR's will be used. The data cover more than three decades of completed projects and will be used for analysis of trends over time, changes in project composition and broad summaries of economic rates of returns in Bank-supported projects.
- The analysis of the quality of economic analysis of completed projects and quality of final cost-benefit estimates (including economic rates of returns, net present value, or cost-effectiveness calculations) will be based on the sample of projects completed in 2007-2008. This review, together with the assessment of quality of analysis at entry will inform recommendations on what kind of economic analysis is desirable for different projects.

- For the analysis of staff attitudes and current management practices at the Bank, the study will rely on a survey of staff and interviews with Bank staff. This information will be used primarily in the section evaluating the weight given to cost-benefit analysis in decisions.

SCHEDULE and MANAGEMENT

23. This special study will be managed by Andrew Warner, Lead Economist, IEGCG. Team members include Pedro Belli, Pablo Guerrero, and Jesse Torrence. Additional consultants will be engaged as needed. The evaluation is expected to be submitted to CODE by the end of the third quarter of FY10.