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Measuring Costs and Benefits of Export Promotion Projects

Findings From A.I.D. Experience

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FOREWORD

Recent economic literature strongly suggests that outward-oriented economies with sound trade, investment, and export systems have achieved better development results than inward-oriented economies. The U.S. Agency for International Development (A.I.D.) has devoted substantial resources to supporting outward-oriented growth through projects focused on export and investment promotion. Two key questions, however, face donors: Is export and investment promotion assistance worthwhile? Does it merit continued A.I.D. support?

This report is part of a worldwide assessment of A.I.D.'s experience with export and investment promotion services. The purpose of the assessment is to evaluate the contribution of intermediaries providing services to exporters in developing countries. Services include those provided directly to exporters or investors, such as information (e.g., about foreign markets), contact making (e.g., with buyers), deal making, technical assistance, and government facilitation. Issues analyzed include the rationale for donor intervention; the impact on exports, jobs, and the market for support services; the return on A.I.D.'s investment; service strategies; and effective service providers. This assessment is based on surveys of exporters in six countries, extensive interviews with service providers, and other sources.

The Center for Development Information and Evaluation (CDIE) initially focused on export and investment promotion projects in Latin America and the Caribbean. A desk review examining 15 projects resulted in a report, *Promoting Trade and Investment in Constrained Environments: A.I.D. Experience in Latin America and the Caribbean*, A.I.D. Evaluation Special Study No. 69. CDIE followed that report with field visits to Guatemala, the Dominican Republic, Costa Rica, and Chile, culminating in a synthesis report, *Export and Investment Promotion: Sustainability and Effective Service Delivery* A.I.D. Program and Operations Assessment Report No. 2. In 1991, CDIE initiated fieldwork in Asia, examining programs in India, Indonesia, Korea, and Thailand. Four country reports have been produced for the Asia phase of the assessment.

This paper explores issues concerning the usefulness and methodology of cost benefit analysis, such as, How useful can cost benefit analysis be in measuring projects? at what cost? and what alternatives can be made? It is one of two cross-cutting technical reports, drawing on the country material. The other cross-cutting report is *Service Use and Its Impact on Export Performance: Results of*

the Asia Survey. In addition, CDIE undertook a desk review of similar projects in the Near East region. (Appendix C contains a list of the papers prepared under this assessment.) The individual technical reports do not explore management implications for A.I.D.; instead, they provide the specificity and country detail that form a basis for drawing management implications in the program assessment report.

The assessment report *Export and Investment Promotion Services: Do They Make a Difference?* (forthcoming) draws on each of these technical reports to present the key findings, conclusions, and management implications of the assessment.

SUMMARY

To strengthen its project evaluation system, the Agency for International Development (A.I.D.) is seeking ways to measure project impact in quantitative terms more effectively. This paper applies impact measurement to an important part of A.I.D.'s private sector portfolio—projects that promote private sector exports and/or export-oriented foreign investment, referred to as *promotion projects*. The aim of this evaluation is to improve accountability in A.I.D. programs by exploring a better methodology for ex post impact analysis. This paper explores applications of standard cost-benefit measurement and other methodologies to export promotion projects.

The measurement of benefits in export promotion programs raises difficult practical and technical issues. Most of the expected benefits from promotion projects are generated by independent exporting firms, not by promotional institutions receiving the funding. Thus, the benefits of such projects depend on the extent to which the actions of firms have been affected by their interaction with promotional institutions. Even where assisted firms are highly successful, the extent to which such success can be attributed to the promotional institution is difficult to determine.

This paper discusses several types of benefits: *direct benefits* (foreign exchange earnings, employment generation, returns to local capital, value added); *indirect benefits* (e.g., new or stronger institutions to promote investment and exports and an improved policy environment for export-oriented investment); and *externalities* (benefits or costs, either to unassisted firms or to others, resulting from the project-related activities of assisted firms).

This paper concludes the following:

- Rigorous cost-benefit analysis of promotion projects is extremely difficult to perform ex post. The massive data requirements imply an unjustifiably large expenditure of scarce evaluation resources, and the reliability of the results is questionable.
- More limited cost-benefit analysis based on data gathered in short field trips (as done for this report) provides only a rough estimate of the rate of return.

- Where time and financial resources are limited, a rate of return calculation based on employment benefits may serve as a useful proxy for a more complete analysis.
- The promotion projects can have significant indirect impacts, but measuring such impacts poses significant challenges. Externalities, particularly learning from other firms, are potentially large.
- Formal cost-benefit analysis is likely to be impracticable in most circumstances. Nevertheless, performance monitoring is essential in promotion projects. This paper identifies approaches to monitoring that can help separate effective approaches from ineffective ones.

GLOSSARY

A.I.D.	U.S. Agency for International Development
ASI	A.I.D.-supported intermediary
CDIE	Center for Development Information and Evaluation
CINDE	Costa Rican Coalition for Development Initiatives
CGE	computable general equilibrium
CINDE/PIE	investment promotion division of CINDE
FCS	Foreign Commercial Service, U.S. Department of Commerce
NASDA	National Association of State Development Agencies
OECD	Organization for Economic Cooperation and Development
PACT	Program for Advancement of Commercial Technology

1. OVERVIEW

The Agency for International Development (A.I.D.) is committed to expanding and strengthening its project evaluation systems. As part of this effort, managers are expected to demonstrate the impact of their projects in quantitative terms, and A.I.D.-supported projects are to be held to stricter criteria for evaluating project success than previously.

This study applies impact measurement to an important part of A.I.D.'s private sector portfolio—projects that promote private sector exports and/or export-oriented foreign investment, referred to hereafter as *promotion projects*. This paper seeks to support improved accountability in A.I.D. programs by exploring the methodology for ex post impact analysis and its application. Cost-benefit methodology builds on one previously used to measure the economic return of promotion projects in the Caribbean Basin (Nathan Associates and Louis Berger International 1992, Volumes 1 and 2). The methodology then is applied to one of the projects in the Asia portfolio of this study. The discussion of impact measurement explores applications of standard cost-benefit measurement and other methodologies to export promotion projects. Drawing on experience in the United States and elsewhere, the discussion suggests improvements to more usefully inform A.I.D. and host country decision-makers.

Measurement of costs in these promotion projects is straightforward, but measurement of program benefits raises difficult practical and technical issues. Benefits are of three types. *Direct benefits* are foreign exchange earnings, employment, returns to local capital, value-added, and so on. *Indirect benefits* are new or strengthened institutions that promote investment, exports, and an improved policy environment for export-oriented investment, both foreign and local. *Externalities*, are benefits or costs, either to unassisted firms or to others, resulting from the project-related activities of assisted firms.

This paper is organized into three parts. Section 2 applies *cost-benefit analysis* to the direct benefits of promotion projects. The section discusses the practical issues surrounding broader application of cost-benefit analysis to promotion projects. It also presents a simplified approach to setting project performance targets, building on the cost-benefit methodology used in this study. In situations in which full-scale cost-benefit analysis is impractical, this "break-even cost-benefit analysis" measures project performance against economic

criteria, which, while falling short of a full project rate of return, yields a better measure of return than cost-effectiveness measures alone.

Section 3 discusses the *measurement of indirect impacts*, including policy, institutional, and externality impacts. Section 4 reviews *alternatives for measurement of impacts of promotion projects*. The section reviews methods used in promotion projects in the United States and other members of the Organization of Economic Cooperation and Development (OECD) and discusses the use of formal cost-benefit measures in design and evaluation. The section concludes that formal cost-benefit analysis is likely to be impracticable in most circumstances and that less ambitious measures, linked to project implementation and monitoring, are often more appropriate.

Appendix A provides a checklist for evaluating capital inputs and outputs from promotion projects, drawing on the body of this report. Appendix B is an application of the methodology used in the Asia projects studied. A rate of return is calculated, based on the available data, and the outcome is subjected to sensitivity analysis. The appendix also examines the findings regarding externalities. The results suggest that externalities, particularly in the form of learning from other firms, are potentially large. These effects are likely to be most significant when one or several firms begin to produce in an area of underexploited comparative advantage. Observation by others of the success of a "frontier" firm, or movement of employees with specialized knowledge from a frontier firm to a potential imitator, can speed the growth of exports or investment.

2. COST-BENEFIT ANALYSIS OF DIRECT PROJECT IMPACTS

Cost-benefit analysis is generally accepted as a theoretically sound methodology for measuring the economic return of a specific development project or program. It is frequently used in ex ante project analyses, but it has been used far less often for monitoring or ex post evaluations.¹

Cost-benefit analysis compares the value of a project-related cost stream with the value of a project-related benefit stream in order to measure the net contribution of a project to the national economy. The basic data requirements and approach for an analysis of the economic return to a promotion project are essentially the same as for any cost-benefit analysis: a stream of financial benefits and costs, together with an appropriate set of economic prices (i.e., "shadow prices" that reflect opportunity cost which differs from the price paid), to translate financial flows into their economic equivalents and to capture any costs and benefits missing from the financial analysis.

Generating cost stream and shadow prices can be vexing in practice, but it raises few issues unique to this class of projects. The cost stream is made up of project expenditures, adjusted to reflect economic opportunity costs if necessary. These costs are relatively easy to capture.

The benefit stream, however, is much more complex. It consists of the net benefit to the economy, taking into consideration (1) the total benefits generated (income), (2) the nonproject resources required to generate this income (the company's investment, for example), and (3) the degree to which the net benefits (1 and 2) are attributable to the project intervention being studied. The

¹The World Bank conducts ex post project evaluations on about 40 percent of the projects funded and seeks to use cost-benefit analysis to measure project return and impact in most of these evaluations. A.I.D. generally conducts a final evaluation of projects funded, but at present these analyses typically do not include a cost-benefit analysis. Inclusion of such an analysis in a greater proportion of final and ex post evaluations is expected under A.I.D.'s ongoing initiative to increase accountability for results.

remainder of this discussion, therefore, focuses primarily on identifying and measuring the net benefit stream.

Application of Cost-Benefit Analysis to Promotion Projects

Investments in export and investment promotion services do not generate benefits directly. Their impact on the economy is felt through additional economic activity and resources generated through expanded exports and new investment. This section discusses how to identify and measure these benefits.

The methodology presented can be used only where the analyst has access to a firm-by-firm "success list" that catalogs specific investments or exports that have taken place and that, at least in the view of project management, can be closely linked to the project intervention. If the success list includes more investments or exports than the evaluation team can practicably analyze in-depth, the success list must include an estimate of the benefits generated by each firm's investment or exports, which can then be adjusted if necessary based on the evaluation team's findings as the basis for estimating total project benefits.²

If project management cannot provide a list of successes and their respective benefits, evaluators are faced with the difficult task of reconstructing a list of assisted companies from project records (often incomplete and scattered) and then contacting the companies to determine project impact. In practice, this is an extremely difficult task. The implementing organization may be able to provide limited help, particularly if the lack of a success list stems from a combination of poor project management and limited success. Development of a list of beneficiaries after the fact is particularly difficult and unsatisfactory when the services provided to each company were minimal and a large number of firms were assisted.

Despite the difficulty of reconstructing project benefits, few alternatives are available to develop the quantitative estimate of benefits needed for project evaluation. Two possible alternatives will generally not yield reliable results and should be avoided:

- *A survey of all exporters and investors.* A survey can provide a great deal of information about the services that firms use and find useful, but it simply does not provide the detailed information needed to

²Unless evaluators are able to collect information on all of the success cases individually, the list must include firm-by-firm benefits (jobs, exports, and so forth), which can then be verified or adjusted based on in-depth analyses of a sample of the success cases.

assess project benefits for two reasons. First, a company's statement that it uses and values a particular service does not provide an adequate basis for attaching a monetary value to that service. Second, even a large-scale random survey of exporters or investors may turn up too few users of the program being analyzed to yield meaningful results, particularly in a large country.

- *The incrementum ad absurdum method.* In all but the smallest of countries, it is possible to generate a high estimate of the project's return by simply assuming that the project increased national exports (or investments) by a specific (very small) percentage. In the case of small projects in large countries with rapid export growth, seemingly modest assumptions readily lead to high rates of return.³ No matter how reasonable the individual assumptions may seem, this approach amounts to making up a benefit stream and is too easily abused to be used with confidence. As some of the projects subsequently described demonstrate, programs designed and implemented in good faith may have no discernible impact at all.

Assuming the availability of a success list, the following three questions must be answered:

- *What were the costs and benefits associated with each company on the list?* The departure point for this analysis is a year-by-year cash-flow analysis, which is then revalued to economic (shadow) prices. (Companies not on the success list are excluded because, by definition, they did not generate benefits; the costs of assisting these companies must be included in the project's cost stream, however.)
- *What was the role of the project in generating these benefits and costs?* For a promotional project, the "without project" case is not necessarily the absence of the investments or exports documented as successes; some or all of these might have taken place without the project.

³For example, India's exports of manufactures were \$10.8 billion in 1988. Assuming a net export content of 80 percent and an overvaluation of 20 percent, a 1-year project spending of \$10 million would generate a rate of return of over 12 percent if it achieved a single increase in exports (continuing for 20 years, beginning 3 years later) of only 0.1 percent (\$10.8 million in exports annually, below the level achieved by the average assisted firm in the sample).

- *What costs and benefits were generated externally to the assisted investments or exports?* Indirect and external impacts are discussed in Section 3.

Developing the List of Project Net Benefits

The economic benefits from project-generated investments or generated exports derive from the *difference between the value of the project-generated outputs and the resources used to produce them*. Project-generated outputs may be viewed as constituting intermediate inputs and value-added (the difference between the value of outputs and the value of inputs). In financial terms, value-added is in turn accounted for by labor costs, payments for management, taxes paid to the government, returns to the capital invested in the project (debt and equity), and other factor payments.

The economic benefits are derived by comparing value-added to the resources used to generate value-added, all measured using economic prices. The main adjustments required to obtain economic or shadow prices that reflect the opportunity cost may be summarized as follows:

- *Intermediate inputs.* Local market prices may not reflect the true value of these inputs to the economy if, for example, they are imported at an artificially inflated exchange rate; the correction to economic prices is made by revaluing the inputs at world prices using an estimate of the appropriate exchange rate, if necessary. Energy prices are a frequent source of distortion.
- *Outputs.* Local market prices are subject to the same potential distortions relative to their value to the economy, and the correction is the same: revaluation using the "correct" (shadow) exchange rate and border prices.
- *Labor.* To the extent that unskilled or skilled labor is underemployed in the economy, the wage rate generally overstates the true value of the labor. A shadow wage rate is used to revalue labor inputs.
- *Investment.* Required new investment or infrastructure expansion must be shadow priced and included as a cost in the year incurred.

The portion of the corrected value of the outputs that remains after the corrected values of all inputs have been subtracted yields the level of economic benefits realized in each year (return to capital need not be calculated separately;

the internal rate of return calculation will achieve that aim if the investment made is properly valued).

This basic procedure must be adjusted to reflect the source of capital and the destination of the output, however (assuming imports of labor and other noncapital factors for the project are minor).⁴ This step differentiates between investment and export promotion by examining the "without project" situation more closely. This requires answering several technical questions, which, for brevity, are presented in Appendix A.

In the Caribbean Basin study (Nathan Associates and Louis Berger International 1992), virtually all the investment in export operations was foreign and was linked directly to the specific activities studied. Consequently, no specific treatment of capital was required. This simplification may not apply to firms in the Asian sample, where foreign investment may take over or buy into an existing facility and local firms may shift capacity from domestic production to exports. Local taxes and use of local nonfactor inputs also require detailed treatment because most of the investments take place outside free zones.

Data problems can be minimized by concentrating on those factors in which the difference between financial and economic prices is likely to be largest. Together with careful treatment of capital and sales revenues, the following are likely to capture most of the difference between economic and financial costs:⁵ (1) adjusting the wage bill to reflect overpricing of unskilled labor relative to the economic opportunity cost, (2) adjusting net foreign exchange earnings to reflect deviation between the market and shadow exchange rates, and (3) adjusting energy costs to reflect subsidies of energy use.

With the current wave of policy reform in developing countries to eliminate distortions in pricing systems, the second two distortions are declining in importance and could disappear. The first distortion, however, is considered by many to be inherent in labor markets of developing countries. Assuming that unemployment continues, this feature makes employment benefits the most

⁴The authors are indebted to Dr. Michael Roemer of the Harvard Institute for International Development for pointing out the importance of correctly treating foreign and local capital flows in the analysis. Any errors in interpretation are solely the responsibility of the authors.

⁵The team is indebted to Michael Roemer for suggesting this approach.

reliable continued source of potential project benefits.⁶ This insight led the team to propose a simplified methodology based entirely on employment benefits.

As this abbreviated review suggests, economic analysis of an export or investment promotion program requires a large amount of data. In practice, many of the data are difficult to obtain because firms treat them as confidential. Conceptually, economic net benefits can be expressed as follows (Warr 1989; Corrales 1990):⁷

$$\begin{aligned} \text{Net economic benefits} &= (\text{Value-added in economic prices}) - (\text{opportunity cost of factors needed to generate value-added}) \\ &\text{or} \\ \text{Net economic benefits} &= [X * F + S] - [(I * F + Id) + (E * E1) + (W * W1) + (M * F + Md * PMd) + O] \end{aligned}$$

where:

X	=	Total Exports (FOB)
S	=	Total Domestic Sales
F	=	Conversion Factor for Overvalued Exchange Rate
I	=	Investment Using Foreign Capital
Id	=	Investment Using Domestic Capital
M	=	Total Imports—Packing and Raw Materials (CIF)
Md	=	Domestic Raw Materials and Packing Materials
PMd	=	Domestic Price for Raw Materials and Packing Materials
W	=	Total Wage Bill
W1	=	Shadow Wage Conversion Factor
E	=	Volume of Consumed Electricity
E1	=	Shadow Electricity Conversion Factor
O	=	Other domestic expenditures (e.g., C&F charges)

Determining Attribution

Once net benefits are calculated, the next step is to scale back the firm-level net-benefit stream in order to examine that portion of the benefits attributable to project inputs, the "attribution rate." The attribution rate represents the

⁶The other primary source of benefits is any profit to the firm's owners that exceeds the return available to other investments in the local economy. This excess profit may be attributable to the greater risk involved, to lags in response to opportunities, or to imperfect information. Measurement of such profits is extremely difficult, not least because owners have little to gain, and often a great deal to lose, from making this known. For public sector projects, high profitability creates no such secrecy or distributional issue.

⁷The formula shown here applies to cash flow in domestic currency.

analyst's estimate of the probability that project benefits would have accrued without the intervention of the project. There is no well-established methodological basis for selecting an attribution rate. The problem facing the analyst is therefore the reverse of that concerning the measurement of value-added. It is theoretically difficult, but practically easy: the analyst must simply decide which arbitrary approach to take.

In the Caribbean Basin study (Nathan Associates and Louis Berger International 1992), attribution was approached from several angles. First, performance of assisted firms was compared with that of unassisted firms. While assisted firms outperformed unassisted firms, various factors other than the services provided by the A.I.D.-supported intermediary (ASI) could be responsible. To further probe attribution, each firm was asked to rate the importance of the ASI in its decision to export. A response that the ASI was "critical" or "very important" was taken as evidence of attribution. A second question, used as a check, asked firms to assign percentage shares of credit for their success either to themselves or to specific service providers, including ASIs. In the study, the attribution rate ranged from 30 to 70 percent, depending on the specific project.

Since project benefits are highly sensitive to the attribution rate, its selection is extremely important. This problem remains one of the principal barriers to sound cost-benefit analysis of promotion projects and, in the view of the authors, underlies the absence of cost-benefit analysis of promotion projects. Because of this issue, cost-benefit analysis of promotion projects inevitably remains more a matter of professional judgment than strictly technical assessment.

Is Application of Cost-Benefit Analysis to Promotion Programs Appropriate?

From a theoretical standpoint, there is no doubt that cost-benefit analysis provides the most complete measurement of project economic return available, short of a general equilibrium framework. Cost-benefit analysis is by no means costless, however. Therefore, it is important to consider the costs and benefits of such analysis before considering its broader use for ex post project evaluation.

For several reasons, promotion projects are among the most difficult to analyze using a cost-benefit framework. The problems are both practical and theoretical, but the practical problems are by far the hardest to handle. As previously discussed, rigorous cost-benefit analysis of export and investment projects is based on measuring net value-added, the difference between value-added measured in financial prices and in economic prices. In other words, the stream of economic benefits derives from measuring value-added generated over

and above the economic opportunity cost of the factors needed to produce it (land, labor, capital, technology, and so forth). The value-added base from which the economic value of factors is subtracted must also be adjusted using economic prices to revalue intermediate inputs and final output, as appropriate.

In practice, this procedure is extremely difficult to implement in an ex post framework. Ex post project evaluation is recognized to be more difficult than ex ante analysis, if only because facts must replace assumptions. The task of capturing these achievements quantitatively, however, is particularly difficult with promotion projects for two main reasons. First, *promotion projects require that extensive data on costs and returns be provided by private for-profit firms*, which may be understandably hesitant to reveal figures that may be of interest to their competitors, tax collectors, absentee owners, and others. Second, *the companies assisted are likely to differ from each other to a much larger extent than do the beneficiaries of many other assistance projects*. For example, farm surveys can be used to develop averages across a given region or crop, which can then be applied with reasonable confidence in the cost-benefit analysis. This is not the case for large, discrete, and highly varied investments.

The diversity of assisted companies also makes the necessary economic corrections more difficult. For example, the wage bill correction for a project promoting agricultural exports (relying primarily on a homogeneous rural unskilled labor base) is generally easier to calculate than that for a portfolio of urban-based investment subprojects that use both skilled and unskilled labor drawn from a variety of rural and urban markets. Agricultural labor in India is clearly undervalued, but are engineers effectively protected or underpaid by India's complex tariff regime?

Unlike small farmers (especially hypothetical ones), for-profit firms are understandably hesitant to reveal detailed financial information. In a survey of American firms conducted for an evaluation of a State-level program, for example, fully one quarter of the firms refused even to state whether they had increased exports, although they were not asked to quantify the gains achieved (Liner, Singer, and Hatry 1989). When asked subsequently to quantify increased export sales, 54 percent failed to answer. These problems make it more difficult and costly to obtain the data needed for cost-benefit analysis of promotion projects than for analysis of most other projects.

Realistically, few project monitoring and evaluation systems are up to the task of generating, adjusting, and analyzing the mountain of data required for a careful, firm-by-firm analysis. As a result, there is a noticeable lacuna in the evaluation literature for promotional programs. The team searched for cost-benefit analyses not only among A.I.D. and World Bank projects, but also among export and investment promotion projects in the United States (at the State and

national level) and the formal literature. Many interesting studies were found, including several that had independently developed methodologies similar to those used by the team. With the exception of the Corrales (1990) study for Costa Rica and analysis of Latin American experience (Nathan Associates and Louis Berger International 1992), however, no formal cost benefit analyses were found that attempted to measure the return to promotion as such.⁸ Indeed, the cost-benefit and export/investment promotion experts contacted by the team unanimously expressed the view that rigorous ex post evaluation of such projects in the United States or elsewhere is impracticable.

Both the absence of completed studies and the results of interviews strongly suggest that other agencies have decided that rigorous cost-benefit analysis of promotion projects is not worth the resources required. Based on the interviews conducted, this conclusion appears to derive equally from the belief that such analyses do not produce reliable results (a view expressed by many of those interviewed) and from the view that a reliable study would require an unjustifiably large expenditure of scarce evaluation resources.

The team is not in a position to make a recommendation to A.I.D. regarding greater use of formal cost-benefit analysis in these projects. Despite the theoretical case to be made for greater use of cost-benefit analysis, the weight of evidence strongly suggests that a decision to require such analysis would be a costly one in terms of both real resources and opportunity costs. (Even use of cost-benefit analysis must be subjected to a comparison of costs and benefits!)

⁸Two attempts to measure the impact of foreign investment were identified: one by Encarnation and Wells (1986) of foreign investments (not promotion) based on pro forma cash-flow statements from investment applications to government agencies; and a study by Warr (1989) of returns to investments in free zones. By their nature, free zones require domestic and imported inputs and outputs to be carefully logged in and out. Firms may also need to make extensive pro forma statements to gain initial government approval. Neither study attempted to measure the returns to promotion as such.

A Cost-Benefit Methodology for Setting Performance Targets

The need to demonstrate impact from promotion projects is real, but, as this study demonstrates, such information is costly.⁹ This section presents a simplified approach to setting and monitoring performance targets in hopes of overcoming this dilemma. The approach uses a greatly slimmed-down version of the cost-benefit methodology previously presented in order to develop an analytic tool that is modest in its data requirements and simple to use but that nonetheless provides an order-of-magnitude measure of project economic return.

The approach proposed here is based on analysis of the economic return from job creation. It provides a measure of how many jobs would need to be created per unit of project expenditure to generate a rate of return of 12 percent, under alternative assumptions regarding wage rates, attribution, and the shadow price of labor.

Reliance on employment creation as the primary means of assessing project benefits offers an attractive compromise between full-scale cost-benefit analysis and no analysis at all for the following reasons. First, labor is an important element in value-added, and labor-based benefits are therefore likely to be a major element in the underlying benefit stream that the analyst seeks to measure. Second, job creation is generally of particular concern to decision-makers. Third, because direct-labor benefits derive from a basic imperfection in the labor market, they are likely to continue as long as there is substantial under- and unemployment. They are therefore more stable and reliable long-term sources of benefits than policy-based distortions, such as currency overvaluation. Fourth, employment levels are easy to measure and, from the standpoint of the firm, noncontroversial. Finally, it is reasonable to expect that employment benefits are positively, if imperfectly, correlated with other benefits.

The measurement of employment benefits, therefore, provides a useful, if imperfect, basis for making a rough estimate of a program's rate of return. In

⁹A good example of the high costs associated with doing full-scale economic evaluations is seen in the Corrales (1990) study of the Costa Rican Coalition for Development Initiatives (CINDE) investment promotion project in Costa Rica. This project has one of the most comprehensive monitoring systems and is able to provide detailed and up-to-date information on investments, estimated exports, and employment generated. Even with this information, a full-scale economic evaluation of the project took 6 months of survey and data analysis to complete.

Such investments are likely to be higher in cases in which the monitoring systems are incomplete or not as comprehensive.

situations in which time and financial resources are limited, a rate-of-return calculation based on employment benefits may serve as a proxy for a more complete analysis.

The information requirements for employment-related cost-benefit analysis are straightforward:

- Number of jobs generated (J)
- Average annual wage rate (W)
- Average shadow conversion rate for labor in the country in which promotion takes place (LCR)
- Level of program attribution associated with the new jobs generated (A)

The benefit stream is then calculated using the following formula:

$$J * W * (1 - LCR) * A$$

This formula captures the benefit associated with new employment from a new investment or export, using the methodology previously outlined. It calculates the marginal benefit based on the difference between the financial and the economic cost associated with the generation of project value-added. The labor conversion factor is generally stated as a percentage reflecting the ratio of the economic opportunity cost of labor to the financial wage. The opportunity cost of labor might be calculated by surveying workers to learn what wage increase they obtained by moving into their new job. The Corrales (1990) study in Costa Rica used this methodology and found an average wage increase of 28 percent. In the absence of better information, one might use the employment rate (1 – the unemployment rate) as a proxy for the shadow conversion factor. The attribution rate is judgmental, as noted, and should be based on a client survey or other mechanism to determine the percentage of investments or exports reasonably attributable to project assistance.

Taking this procedure one step further, it is possible to use this approach to determine the number of jobs a promotion program must generate in order to justify a given expenditure.¹⁰ Table 1 presents a range of estimates based on a target rate of return of 12 percent, a project expenditure unit of \$1 million, and

¹⁰Or, more accurately, an expenditure stream with a present value (at the target rate of return) equivalent to an expenditure of \$1 million in Year 1.

various combinations of wage rate, unemployment rate, and attribution rate assigned. For example, a program with a 50 percent attribution rate (a program in which substantial assistance was provided to each firm on the success list) would achieve a 12 percent rate of return if it generated more than 1,650 jobs for every \$1 million spent, in an economic environment in which the average wage rate is \$3 per day and the labor conversion factor is 75 percent. A weaker program in the same environment (with only 10 percent attribution) would have to generate more than 8,500 jobs per \$1 million of promotion program expenditures in order to generate a rate of return of at least 12 percent.

Table 1. Simplified Framework for Analyzing Promotion Projects

Wages/ Day (\$)	1 - Labor Conversion Factor (\$)	Number of New Jobs Required	Promotion Cost Per Job (\$)
A. Very Good Program (50% Attribution):			
3	25	1,650	606
3	10	4,100	244
5	25	1,000	1,000
5	10	2,500	400
10	25	500	2,000
10	10	1,250	800
B. Weak Program (10% Attribution):			
3	25	8,250	121
3	10	20,500	49
5	25	5,000	200
5	10	12,500	80
10	25	2,500	400
10	10	6,250	160

Source: Consultant estimates

Note: Above data assume each \$1 million investment takes place in Year 1, with a 12 percent return over a 20-year horizon. Jobs are phased in over 3 years: 25 percent in Year 2, 50 percent in Year 3, and 100 percent in Year 4. No additional jobs are assumed after Year 4. Attribution refers to the percentage of new jobs attributed to the promotion program.

The promotion cost per job can also be calculated using this procedure. These calculations suggest that, with a target rate of return of 12 percent, the promotion cost per job must generally be held below \$1,000. Assuming 50 percent attribution, for example, the maximum average program cost per job generated consistent with a 12 percent rate of return is as follows:

<u>Economic Environment</u>	<u>Promotion Cost Per Job</u>
25% Unemployment/Wages \$3/day	\$ 606
25% Unemployment/Wages \$10/day	\$2,000
10% Unemployment/Wages \$3/day	\$ 244
10% Unemployment/Wages \$10/day	\$ 800

This methodology provides a back-of-the-envelope calculation on the return of promotion projects. The appeal of this system is that it relies on basic data that an effective management information system or a survey-based evaluation could generate. In addition, it provides a generally conservative estimate of project rate of return without requiring too many assumptions.

The downside of this approach is that it oversimplifies the cost-benefit procedure. In the name of simplicity and practicality, it excludes important linkages and value-added benefit streams (e.g., return to capital, local materials, and so forth) and, therefore, may distort comparison of different program models. By measuring only job-related benefits, for example, this method may underestimate the return to promotion of less labor-intensive but high value-added industries or programs in which spin-off (externality) benefits are particularly important. In such cases, it might be appropriate to adjust the methodology by, for example, scaling job-creation figures up or down to reflect whether a job is in an industry with high or low indirect benefits (e.g., a high technology job could be worth 10 low technology jobs).

3. MEASURING INDIRECT IMPACTS

Indirect impacts from promotion projects derive from two sources: (1) *policy and institutional impacts* achieved through development of new institutions in support of future growth of exports and investment and in the fostering of a more favorable policy environment and (2) *externality impacts* that accrue in the form of benefits received by firms other than direct participants in the supported program (for example, through introduction of new technologies later adapted by other firms).

Methodologies for Measuring Policy and Institutional Impacts

The projects studied generally sought to influence the institutional and policy environment for investment and export as well as to provide assistance to specific firms or industries. Changes in the environment, whether linked to the projects studied, create the conditions for economic growth but do not create growth itself. Consequently, we have termed the benefits deriving from improvements in policies and institutions "indirect benefits" for purposes of this study.

The institutional and policy impacts of promotion projects are often indirect in another sense. Rather than seeking impacts directly, such projects often seek to influence policy indirectly by demonstrating the value of exports, investment, and promotion, rather than directly through conditionality or policy analysis.

The projects' intended impact on the institutional structure was generally more direct. Unlike the Caribbean Basin projects, the projects in Asia did not create new institutions. They did seek, however, to strengthen the capacity of existing, primarily public sector institutions in the areas of investment, export promotion, and private enterprise support. The Indonesian project also sought to strengthen the market for private sector services by demonstrating their validity to potential private sector users (primarily local firms).

To measure policy and institutional impact in quantitative terms is extremely difficult. It is rarely if ever attempted, at least in a policy evaluation

context.¹¹ Analysis of policy impacts is usually restricted to demonstrating that (1) the policy change occurred and (2) the project contributed materially to bringing the change about.

The second and more difficult half of this equation offers particular challenges in the case of A.I.D.'s Asian portfolio, in comparison with the portfolio that was analyzed in the earlier Latin American study. A.I.D. is a much larger donor in the Caribbean Basin than in Asia and has generally placed much more emphasis on policy change (in the portfolio as a whole as well as in the export and investment promotion portfolio).

There is no proven or easy method to verify and measure attribution in the case of policy change. The key challenges are to avoid the *post hoc ergo propter hoc* fallacy ("A" happened after "B"; therefore "B" caused "A") and to make a balanced assessment of the project's role in bringing the policy change about. Interviews with policymakers and demonstrated links between specific A.I.D.-sponsored recommendations and the changes adopted are two key indicators used to buttress the argument for causality. This argument, however, can never be conclusive where the output is policy change.

An interesting and unexplored question in this regard is the interaction between the growth of export industries and the implementation of policy changes that favor continued growth. In other words, it is appropriate to question, within a political economy or public choice framework, whether policy change precedes the development of an export industry or whether the two go hand in hand, with each successive round of policy change giving rise to expansion of the export sector, which in turn creates a stronger constituency for change and demonstrates the value of reform.

Institutional development is equally difficult to demonstrate, although for different reasons. In Latin America, the institutions studied were generally effective and reasonably well managed but heavily dependent on A.I.D. funding. In Asia, the agencies were reasonably effective, but the A.I.D.-funded programs were peripheral to their overall operation. Even where institutional development is a major focus of the program (as it generally was not in Asia) institutional development impact cannot properly be judged until A.I.D. support has been withdrawn and a sufficient period has elapsed to determine whether the programs have become sustainable.

¹¹The World Bank's computable general equilibrium (CGE) models represent one attempt to measure the impact of policy change at the macroeconomic level, but these models require a level of data and analytic rigor that make them difficult to apply in a project context.

The approach taken to assess institutional performance for promotional organizations is essentially the same as in any institutional analysis, encompassing institutional structure, management, finance, and performance. Based on the lessons learned in the Caribbean Basin and Asian case studies, it would appear that an institution's ability to communicate with its clients, particularly including systems for feedback on program impact and services offered, is critical to the effectiveness of promotional institutions.

Methodologies for Measuring Externality Impacts

Externalities to investment and export promotion arise from the following two distinct sources:

1. *Impact on other firms.* The entry of new investors and new exporters may generate demonstration effects and additional benefits for other firms considering entry. Entry of new firms may also harm existing firms.
2. *Environmental and social externalities.* Like other projects, foreign investments and expansion of local firms into export markets may generate positive or negative externalities, including environmental pollution, improvements, or degradation of infrastructure for which the firms do not bear the full costs or reap the full benefits, and so on.

Only the first of these two distinct sources is of particular interest for investment and export promotion projects. The second may be no less important but poses generic issues for all types of projects. These generic issues, and methodologies to deal with them, are extensively treated in the general cost-benefit, project appraisal, and evaluation literature.

Foreign investment projects and expansion of local firms into export markets may generate a wide range of costs and benefits that affect other firms but are not fully reflected in the marketplace. Several of the most important include the following:

1. *Introduction of new business lines.* The first entrant into a new industry, such as garment assembly for export, provides useful information to other firms that may be motivated to enter the same business if it is successful by learning the business through observing the firm (or, very often, by hiring someone who has worked for it).
2. *Introduction of new technologies.* Manufacturing, management, finance, and marketing technologies are copied from firm to firm.

Firms also serve as training grounds for technicians, workers, and managers, who may subsequently take their skills elsewhere.

3. *Introduction of new products.* When one firm successfully develops a new product, other firms are likely to follow the innovator if they can.
4. *Displacement of existing industries.* Firms that do not or cannot follow innovators in local markets—whether the latter are foreign entrants or local firms that capitalize on international success to expand locally—may find themselves out of business. The adjustment costs experienced by existing companies and their erstwhile employees are a potentially large negative externality and one arguably too often ignored.¹²
5. *Multiplier effects.* Economic activity generates more economic activity. This is likely to be true in a new industry in which demand for new products and services can lead to rapid growth in peripheral industries and in the communities in which they operate.

The specific channels through which these externalities can occur are far too numerous to be listed here. Many of these costs and benefits are transient, indirect, or unpredictable. For example, in a rapidly evolving field, new technologies may be developed, copied, dispersed, and dropped in 1 or 2 years. In other cases, external benefits may build up over a decade or more, as, for example, with the evolution of a major new industry. Both of these factors make markets that incorporate the externalities unlikely to develop. Even where intellectual property rights are much more developed than in developing countries where A.I.D. works, it is likely to be difficult for an entrepreneur to participate in the benefits her or his competitors gain by imitation.

These same difficulties make measurement of externalities for analysis extremely difficult and arbitrary. In retrospect, it can be said that the first

¹²The size, importance, and duration of these impacts must be judged on a case-by-case basis, and a judgment must also be made about the project's role in bringing these changes about. At one extreme, a project-supported investment may have been only one among a large number of factors bringing about the decline of an inefficient and uncompetitive local industry. In this case, the project may actually facilitate a long-term process of benefit to the economy. At the other extreme, the project-supported investment may simply add another firm to a large existing industry, with little displacement or impact on industrywide efficiency at all.

electronics assembly firm in Malaysia spawned an industry; however, it is far more difficult to spot such phenomena in their early stages or to trace and quantify the impact of a single firm on a rapidly evolving, highly competitive international industry. Putting numbers to these impacts is therefore not an exercise for the fainthearted. By stringing together plausible assumptions (for example, increased lifetime earnings of all the workers trained in project-supported investments), high levels of benefits can easily be obtained. Such estimates virtually always lead to reassuringly high rates of return but do not generate results in which the analyst can have real confidence.

Indirect benefits—policy reform and institutional impacts—were not a major focus of this study. They are addressed to some degree in the country studies (particularly in the India case study) and in a technical paper on service use and impact that is a companion piece to this report. In both cases, the methodology used was based on interviews with decision-makers, project managers, and service providers, including the institutions directly assisted by the project as well as a cross-section of other public and private service providers.

The study sought to use the survey of assisted and unassisted firms to capture externality impacts more rigorously. For practical reasons, it did not try to quantify such impacts of the specific A.I.D. projects,¹³ but it did attempt to assess externalities associated with exports and investment in general. The design was based on the following two assumptions about these benefits:

1. *The main sources of externality benefits are likely to be innovations by unassisted companies based on observing assisted companies.* The survey, therefore, sought to determine the importance to companies of information on the experience and performance of other companies in their field.
2. *Innovative companies are more likely to be an important source of external benefits to other firms than are those that are in the mainstream.* The survey, therefore, included questions designed to determine whether A.I.D.-assisted firms were more innovative than the other firms surveyed.

In the course of the survey, it became clear that external benefits also arise through the movement of personnel, particularly through the departure of managerial employees from exporting firms in order to start their own companies or to

¹³Neither the Indonesian nor Thailand projects generated identifiable specific investments that could have served the purpose; the India project was too new to look for impacts on other firms.

work for new entrants. Questions designed to capture these benefits were therefore included in the questionnaire. Appendix B summarizes the findings of the Asia survey regarding externalities.

4. OPTIMIZING IMPACT MEASUREMENT FOR PROMOTION PROJECTS

This section explores the following two questions: (1) What is the potential *impact* of increased emphasis on measurement on project design and implementation? and (2) What is a *reasonable standard* for impact measurement in such programs?

The discussion of both issues is intended to help A.I.D. managers improve impact accountability. The section concludes with a brief discussion of cost-effective ways to use these findings to improve impact measurement.

Costs and Benefits of Impact Measurement

In a world of limitless resources, there would be no need to trade off between information to measure short-term project performance to guide project implementation and information to measure long-term economic return to guide program development. In the real world of limited analytic resources, however, this trade-off must be directly confronted. A consensus emerged from interviews with experienced analysts of promotion projects, both in the United States and overseas, that in developing project information systems, information that provides useful short-term guidance for implementation deserves at least equal weight with one-time measurements of project return.

Measurability, moreover, should not be pursued to the point with which it drives the design of promotion projects. Certain types of projects can more readily demonstrate and quantify benefits, but this transparency does not imply that the benefits are necessarily greater than for other projects with less easily quantified benefits. Projects designed to affect the policy environment, for example, are virtually impossible to analyze in rigorous, *ex post*, cost-benefit terms. However, this surely cannot be interpreted as evidence that the emphasis on improving policy is misplaced.

The drive for measurability carries the risk of engendering subtle, but nonetheless pernicious, pressures on the design and implementation of promotion

projects. These effects derive from the fact that provision of intensive support to a few large companies is the easiest path to developing a convincing success list. Carried too far, the search for measurability may push projects toward a concentration of services on a limited number of relatively large beneficiary companies. This approach would not, however, necessarily maximize actual project impact.

On the contrary, the survey findings presented in an accompanying paper strongly suggest that services to small and mid-size firms that are ready to export (or ready to invest) may well be more appropriate for donor assistance than services to large, established firms, which are better able to fend for themselves. Similarly, the survey points up the importance of government-supported services early in the decision process, particularly for basic information and for potential business partners. More specific services needed later in the decision process are likely to be better provided by the private sector. A program of intensive assistance to a few firms would therefore be more likely to duplicate private sector services.

These findings are borne out by the analyses of U.S. domestic promotion programs identified by the team, as well as by the earlier Caribbean Basin study (Nathan Associates and Louis Berger International 1992). Studies of U.S. and other OECD countries' domestic programs have generally counseled that programs be directed to "ready-to-export" firms and the "infrequent exporter", to cite the Commerce Department's current guidelines. An evaluation of an Illinois State program concluded that "...very small firms that had not exported before were consistently appreciative of and positively affected by receiving state services. Reconsideration of services for smaller, inexperienced firms appears to be in order" (Liner, Singer, and Hatry 1989, 12).

Finally, projects under pressure to generate a success list tend to focus on areas where a pattern of export or foreign investment is already established (e.g., electronics assembly in Thailand) because it is relatively easy to attract additional entrants to proven fields. Overemphasis on the generation of an unassailable success list, therefore, discourages agencies from seeking investments or exports in new areas, even though these are precisely the areas where promotion is most needed and where externality benefits are most likely.

By contrast, projects that provide information to firms early in the investment or export process generally make limited contact with a large number of firms. These projects are more difficult to analyze quantitatively. Regular followup with clientele in order to trace and document the results achieved, possibly months or years later, would entail a substantial effort. Indeed, the cost of tracking an assisted firm to export maturity could exceed the cost of the initial service provided. The evaluation of such impacts requires that firms be surveyed

periodically, repeatedly if possible, a requirement that generally limits the effort to a sample of assisted firms because of costs. Given the high variability of firm-to-firm performance, the findings from such a sample are inevitably tentative, subject to a high degree of variability and difficult to use in quantitative analysis.

In sum, the justifiable drive for proven impact can potentially lead project designers to approaches with more readily quantifiable but less actual impact. Projects that reach a broader base of private sector firms are also likely to be less measurable than those that target a few (usually large) firms.

Experience of Other Promotion Programs With Impact Measurement

The growth of A.I.D. funding for investment and export promotion over the past 10 years is part of a larger trend in government support for private sector growth. In both developed and developing countries, governments are expanding their support for trade and investment linkages. Not only have most of the major donors increased funding for promotion programs in developing countries but expenditures by OECD governments on their own behalf have also greatly increased.¹⁴

Rising allocations of funds have led, not surprisingly, to increased interest in measuring the impact of the programs funded, thus providing useful guidance for A.I.D. in designing information systems for its own use.¹⁵

¹⁴At the present time, most OECD countries have established export promotion and foreign investment promotion programs aimed respectively at helping their own firms to export or attracting foreign investment. The United States is one of the few that does not have a national foreign investment promotion program, although the Commerce Department's U.S. and Foreign Commercial Service (FCS) clearly plays a role in this area as well as in promoting exports. Most of the U.S. State Governments have both programs in place, as do a number of subnational units in other OECD countries (Brittany in France and Scotland in the United Kingdom, for example).

¹⁵As part of this research, the team interviewed a number of recognized experts in the field of project evaluation, including Messrs. Andrew Singer, Louis Wells, and Michael Roemer, and also interviewed representatives of a number of organizations involved in implementing or evaluating promotion projects. The latter included representatives of the World Bank's Operations Evaluation Division, the General Accounting Office (methodology unit), the Commerce Department (both the domestic and foreign branches of the FCS), the Urban

Perhaps the most interesting development in this area is the experience of the U.S. Federal and State Governments. State funding for international trade and investment promotion (usually termed reverse investment recruitment when referring to efforts to attract investment by foreign firms into the United States) has doubled from an average of \$94 million per State in 1982 to an average of \$199 million in 1990.¹⁶ In 1990, approximately 24 percent of total international economic development funding by the States was allocated to investment recruitment. On a per capita basis, States spent an average of \$0.12 for investment recruitment out of a total international budget of \$0.42 per capita. Puerto Rico spent \$4.36 per capita on investment recruitment, while Texas, New Jersey, and New Mexico spent \$0.01 or less per capita.

By way of comparison, CINDE/PIE, the largest program evaluated in the Caribbean Basin Initiative region, spent about \$1.20 per capita annually on investment promotion, and the A.I.D.-supported promotion program in Thailand spent about \$0.03 per capita annually.

These programs provide an appropriate point of comparison for the A.I.D.-funded programs, for several reasons:

1. The activities funded are similar to those supported by A.I.D., though individual programs vary greatly.
2. Evaluation and monitoring systems designed for use by U.S. State Governments suggest an upper end to what is likely to be feasible for developing country governments, in terms of the analytic rigor and level of effort implied.
3. Evaluation and monitoring in both cases serve the same purposes: demonstration of benefits to program management and the entities funding the program (the legislature and the public, in the case of domestic programs) and improvement of program impact.

Institute, the British Embassy, the British Overseas Trade Development Board, the Southern Growth Policies Board, the National Association of State Development Agencies (NASDA), and others.

¹⁶The 1982 figure is quoted in Hatry, Fall, Singer, and Liner (1990). The 1990 figure is quoted in the May 1991 newsletter of the Clearinghouse on State International Policies, published by the Southern International Policy Network, in Research Triangle Park, North Carolina. The newsletter cites the NASDA State Export Program Database as the source for the data.

Systems developed by OECD governments for their own use have not included rate of return measures. They have focused instead on more limited questions—jobs created, export business generated for local firms, and effective uses of public funds. Over the past 5 years, it has become apparent that few programs are able to answer even these simpler questions convincingly. Many organizations are therefore improving their capability to answer these questions through better performance monitoring and analysis. All such efforts identified by this study stop well short of formal cost-benefit analysis, which appears to be rarely used outside of the donor community as an ex post evaluation tool.

Discussions with a number of agencies involved in this process revealed three common threads:

1. Currently, promotion programs generally do not generate impact data sufficient to measure performance.
2. Systems are under development to measure program outputs and improve performance monitoring.
3. Improved program performance, not quantitative measurement, is the central emphasis of these systems.

The problem of poor data is by no means limited to A.I.D.-funded projects. For example, the team evaluating one State program encountered many of the same problems with identification of beneficiaries encountered by CDIE's teams in Indonesia and Thailand.¹⁷ The former team concluded that the program evaluated "currently does not appear to have a process for recording and tracking clients in a systematic way" (Liner, Singer, and Hatry 1989, 13).

Programs at the national level in OECD countries suffer from the same problem and have been only partially successful in addressing it. The Foreign Commercial Service (FCS), for example, has established a system called the "success story data base." As the name suggests, this system standardizes and cross-references success stories submitted by FCS personnel based on contacts with clients. However, these stories are limited to anecdotes. FCS has also established a worldwide system for monitoring activities, expanding on the success story data base. The system institutes monthly reports of support activities (by time input and output), analyzed and reported back to the field level as

¹⁷For example, the State's office in Brussels claimed to have assisted a certain number of firms, but a thorough review of the records identified only about 60 percent as many firms.

a guide to measure performance (in terms of the number of firms advised by each counselor in a given time period, for example).

The British Overseas Trade Board is the only country program that was found to regularly survey its company clients to judge program impact and guide revisions to the service mix. This system, however, is not intended to capture program benefits in a systematic way.

Another response to the widely perceived problem of limited impact data is underway at the State level. Under the leadership of the National Governors' Association and the NASDA, State Governments are undertaking a program to improve evaluation. This program is still in its early stages, and guidelines are expected to be issued in mid-1992.

As part of this effort, a thorough manual has been developed by the Urban Institute with support from the U.S. Commerce Department's Economic Development Authority and others (Hatry et al. 1990). This manual includes simple forms that can be used to monitor and report on the performance of investment promotion and export promotion programs. The manual is designed for use by State programs but is equally applicable to many of the programs supported by A.I.D.

Several systems attempt to link program performance to data collection. The CINDE system in Costa Rica, which rewards staff based on their ability to document jobs and generate investment, remains one of the best examples. The State of Oregon is experimenting with another approach, using contracts that commit companies to report export results for a 12-month period in return for a fixed package of services. To date, this system has signed up only 30 firms, however. Neither of these systems address the critical attribution question.

No instances were identified in which information systems have been or are being established to capture job creation, export generation, or investment realized on a systematic basis, much less systems to capture more complete measures of benefits and costs to support rigorous ex post cost-benefit analysis. Instead, the systems identified focus on information to support program decision-making. Performance monitoring literature also emphasizes collection of information to help in determining whether clients find the support received useful, which types of firms are best able to take advantage of the assistance offered, and how well the agency is meeting firm needs—information that has direct relevance to program management.

The limited evidence available suggests that this information is in fact used to improve program impact. Both the FCS and the British Overseas Trade Board made substantial modifications in their program mix based on these

studies, such as redirecting their services to what we have termed "frontier firms," increasing efforts to link firms (through the FCS agent and distributor finder program, for example), and eliminating costly programs that proved to be underutilized. Recent World Bank studies of promotion programs have also focused on measuring the value of different services to the client firms and then comparing services for cost-effectiveness.

This literature suggests several tools to improve impact accountability, such as the following:

1. *Setting of specific targets linked to government objectives* (e.g., jobs in low-income areas). Such targets were viewed as desirable because ex post claims of jobs or exports generated are difficult to assess. For example, if a program spent \$1 million and generated 1,000 jobs, should this be regarded as success or failure? (A partial answer to this question is offered by the simplified methodology previously outlined.)
2. *Use of intermediate measures* to capture impacts early in the export or investment process. Because movement into new export markets or the realization of a new joint venture may take years, intermediate measures are a useful means of providing decision-makers with an indication of program impact within the time frame needed for funding or program decisions. Such measures might include, for example, an increased number of export leads being actively pursued or a site visit.
3. *Periodic surveys of assisted firms*. In order to be worthwhile and feasible, the expensive exercise of surveying firms cannot be treated as an end-of-project add-on to be used for ex post evaluation only. It must instead be an important element of a client-oriented strategy, demanding regular and systematic contact with the promotion program's clients to assess which services are working and which clients are using the services for greatest impact. The ongoing action research suggested by this conclusion will not be included in the project unless specifically designed into it from the beginning, reflected in the budget, and demanded by the project's monitors.

The foregoing discussion demonstrates that evaluation of promotion project impact is still an area on the methodological frontier. Application of existing methodologies, such as cost-benefit analysis, is costly and difficult. More important, it does not necessarily produce reliable results. The danger exists that a misguided search for ironclad benefit claims may distort promotion projects in ways that actually reduce project impact. The analysis reported in this study highlights the need for better impact measurement to aid decision-making,

but it also underscores the difficulty of developing workable methodologies that will meet this need.

Program design greatly affects the measurability of benefits. Clearly, programs can be structured to include regular monitoring of participant performance and should be if at all possible. If information is not collected from firms when they are assisted, and assistance is not documented in an organized manner, it is virtually impossible to evaluate the project rigorously at a later point. The recommendation to include a project monitoring system in project implementation plans is not a new one but nonetheless bears repeating.

APPENDIX A

A CHECKLIST FOR VALUING CAPITAL INPUTS AND OUTPUTS

1. *Where did the capital come from and where do returns accrue?*
 - a. The imported component of foreign investment tied to the project is not a cost¹ (excluding foreign exchange distortions).
 - b. Foreign profit and remittances are not a benefit to the local economy.
 - c. Foreign acquisition of an existing productive facility imposes a cost on the economy equal to the net economic value of the production that would have taken place under the original ownership. The facility itself is a sunk cost to the economy. Investment (foreign or local) that acquires an existing plant is therefore not an economic cost, but the impact on the local economy of any foregone production must be taken into consideration.
2. *Where do the inputs come from and where do the outputs produced go?*
 - a. New net production for export generates a benefit (related to the value of foreign exchange generated).
 - b. New net production for the local market generates a benefit (directly contributing to the gross domestic product).
 - c. A project that shifts local production to export generates benefits only to the extent that the economic value of the exports exceeds the value of the goods to the local economy (by corollary, if the exports are subsidized, the benefit of such a shift to the economy may be negative).

¹The foreign investment referred to here is limited to direct private investment in a particular project. It is reasonable to assume that this capital would not otherwise have flowed into the country.

- d. A project that displaces local production from other sources generates a benefit only to the extent that the new goods are superior to the goods displaced, after considering costs entailed in finding alternative productive uses for the resources displaced (or failing to find such a use).²

²Suppose that a new factory is built producing shoes for the local market. If the production of this factory simply displaces other local production (of similar cost, quality, etc.), there is not necessarily any gain at all to the economy.

APPENDIX B

APPLICATION OF THE METHODOLOGY TO A PROJECT IN THE ASIA PORTFOLIO

Methodological and Measurement Issues in the Asia Study

The cost-benefit methodology previously discussed was applied to the PACT project,¹ the largest project studied in Asia. This project is still underway so the analysis is not, strictly speaking, an ex post evaluation. It approximates such an analysis by limiting consideration to the costs and benefits from the first stage of the project, for which all A.I.D.-funded inputs are completed.

Cost-benefit analysis of the other Asia projects proved unfeasible. Those projects did not generate sufficient direct, firm-level benefits to merit a quantitative assessment of their rate of return. The lack of identifiable direct benefits suggests that such a calculation would have yielded a negative or, at best, very low rate of return.

There are several factors that made a cost-benefit analysis possible in the PACT case. First, the argument for attribution is strong. Since PACT grants provided an important share of the research and development undertaken by the participating firms, it can be argued that PACT was "critical" to making the investment happen. Second, the number of beneficiaries is small and well documented. All the firms that received assistance were interviewed to identify and confirm the benefits generated. Although several PACT investments are close to the point of commercial exporting, only one has reached that stage. The analysis presented below is based on this firm alone. Finally, the detailed cash flow analyses included in the subproject applications provided a strong base of information to develop a complete cash flow analysis, although substantial additional interviews and analysis were required.

None of these factors were present in the other projects in Indonesia and Thailand and neither country provided a strong case for attribution. (Assistance

¹Program for the Advancement of Commercial Technology by USAID/India. For detailed discussion of the project see Fox, Pelay, and Brunner (1993).

provided consisted of brief consultative meetings, single investment missions or study tours, and the survey found that such assistance was not perceived by the beneficiary as having an impact.) Also, each project assisted a large number of firms (upwards of 200 or more in one case), but none of the implementing organizations maintained a list documenting project-related investments or exports for which they took full or partial credit—much less a listing of jobs created or exports generated. In the absence of a such a listing, an extrapolation of attribution and benefit estimates from the small sample visited to the universe of firms assisted would not be valid, even if such benefits had been supported by the survey. The earlier study of investment and export promotion projects in the Caribbean Basin encountered similar difficulties in applying cost-benefit methodology to the projects studied. Only three out of nine projects reviewed permitted a quantified analysis of the rate of return. In two of these cases, the analysis was limited to the benefits associated with new employment generated by the investments, in part because information on investment costs and returns was not available.

To date, the PACT project has provided grants to more than 20 firms, approximately half of which are export-oriented. Only one firm has actually begun to export, however, beyond trial shipments. Because it would be highly speculative to assign costs and revenues to projects that have not yet begun commercial production, much less exported successfully, the analysis that follows derives its benefit stream *entirely from the cash flow generated by this one current exporter*.²

The project funded research aimed at production, processing, and export of an agricultural product. By 1996, annual production is expected to exceed \$10 million, 99 percent for export. The cash flow analysis obtained from the investor was adjusted to reflect the opportunity cost of labor, energy, and foreign exchange in the Indian economy. It is estimated that the Indian rupee has, for the past 5 years, been overvalued by about 20 percent (in other words, export earnings are really worth about 20 percent more to the local economy than indicated by official rates). Consequently, all export earnings were increased by 20 percent to reflect the overvalued exchange rate, and the cost of imported materials was also increased by this percentage. In this investment, two major inputs were imported and needed to be adjusted. One was the investment in capital equipment and machinery, valued at more than \$1 million (in constant 1991 dollars). The second item is packing materials. About one-third of these materials were estimated to be imported.

²The detailed cash flow information from this project is considered proprietary information. The cash flow statement is therefore not included in this report but is available in the CDIE files in Washington for examination on request.

Following previous studies of investment in India, wages were adjusted downward by 30 percent, reflecting the degree to which wages in rural India are generally believed to exceed the opportunity cost of labor. The 70 percent shadow rate for labor takes into account both official unemployment figures and estimates of underemployment, as well as previous studies (Encarnation 1986). For electricity, earlier studies of the Indian economy have estimated that the shadow price of energy is about twice its market price. Therefore, energy costs were adjusted upwards by 100 percent.

The analysis was based only on direct benefits to the firm and used a 20-year horizon. Potential sources of additional benefits and costs that have been excluded from this analysis are

- *Domestic materials and services.* It is assumed that the financial price of other inputs reflects their opportunity cost and that domestic services and materials would be used by other firms regardless of whether the new investment took place. This indicates a shadow price of 100 percent on materials and services. In fact, some of the domestic inputs used may be protected through import tariffs or subsidized directly or indirectly by the Government. This analysis did not try to adjust inputs for these distortions because of lack of data on these inputs.
- *Secondary or external benefit flows.* This cash flow analysis includes only costs and benefits directly attributable to the project. Any secondary benefits (e.g., investment spinoffs) or externalities (e.g., demonstration effect leading to investment by other companies) are excluded from the analysis, again because of lack of data.
- *Future expansion.* There is no assumption made regarding future expansion or benefit flows through increased investment after 1996.
- *Future exports from other investments.* The analysis does not capture any potential exports or sales resulting from other PACT investments nor the costs associated with such exports. These levels cannot be reliably estimated until commercial sales take place.

In addition to the firm's investment and operating costs used to derive the net benefit stream, the cost stream includes all costs associated with the PACT project. This includes the PACT Grant Fund (\$10 million), promotion costs in India (\$400,000), A.I.D.-financed U.S. advisors (\$1 million), Indian/U.S. Council meeting expenses (\$200,000), evaluation costs (\$70,000), and in-kind contribution made by the ICICI (estimated at \$300,000-400,000). These costs were incurred over a 7-year period.

Findings From the Base Case Analysis

The base case analysis yields an overall economic rate of return on the order of 12 percent. This finding is somewhat difficult to interpret because, as discussed above, it is based on the return from just 1 of 30 investments supported (of which 11 involved exporting). This confirms that "one big hit" can make an investment-oriented project a success (albeit not a resounding one in this case). This finding is also difficult to apply to promotion projects because the PACT program financed research and development by private firms, not a promotion program as such.

Despite these caveats, the optimist would view this finding as encouragingly positive. The base case rate of return of 12 percent may be viewed as conservative in that it reflects the benefits from only 1 investment, and carries the burden of all project costs, including funding for the 19 subprojects not aimed at export markets. Two other investments were starting trial exports when this report was prepared, and most of the other export-related investments funded showed promise. Other successes would automatically increase net benefits.

The pessimist, however, would view the 12 percent return as marginal at best. As the sensitivity analysis that follows shows, changes in key assumptions result in a drop in the return below the 10 percent threshold below which development projects are generally considered economically unjustified. The 100 percent attribution assumed for the specific investment is the most critical of these. If the attribution rate drops to 30 percent, the rate of return would drop below 5 percent—not one that policymakers would like to bank public funds on.

The use of a high attribution rate and exclusion of all but one export project might cancel each other out, but little more can be said without information on future outcomes from the other subprojects.³

Both the PACT and the Caribbean Basin projects confirm the relevance of economic analyses. But the appeal of a clear "bottom line" offered by these analyses should not belie the fact that they provide only an estimate and not a precise measurement of return. Both analyzed data that the project team could collect during short field trips of approximately 4 weeks. These data simply do

³The responses of the 11 PACT firms on the importance of PACT were mixed. Two unequivocally affirmed it as "critical," two as "irrelevant," two as "probably critical," four as "probably not critical," and one as "speeding up the pace and magnitude" of the firm's effort. One weighting scheme (attribution of 100 percent, 0 percent, 75 percent, 25 percent, and 40 percent respectively, to the above cases) would yield an overall attribution rate of 45 percent.

not fully capture all the benefits and costs, although the team made an effort to document the most quantifiable and significant benefits and costs feasible, given time and resource constraints.

The PACT project yielded a much lower rate of return than that found in the earlier analysis of projects in A.I.D.'s Latin America portfolio. The latter case was highly favorable. All three projects had rates of return between 20 percent and 25 percent. Except for attribution, these estimates proved relatively insensitive to changes in key assumptions. The two analyses of manufacturing investment promotion projects in Latin America were particularly conservative, in that benefit flows took into consideration only benefits associated with employment generation and excluded any benefits in the form of return to local capital in excess of its opportunity cost, foreign exchange generation, and so on. (The third analysis, an agribusiness investment, considered these benefit sources as well.)⁴

Sensitivity Analysis

To test the reliability of the estimate in the base case, a number of sensitivity analyses were conducted. These analyses indicate that the rate of return from the base case scenario is sensitive to changes in costs or benefits. As shown in Table B-1, the rate of return drops below 10 percent when (1) benefits are delayed by 1 year, (2) costs are increased by 10 percent, (3) future sales-revenue forecasts are adjusted to show no growth after 1996, (4) a foreign exchange conversion factor of 10 percent is used instead of 20 percent, or 5) the level of attribution is reduced to 20 percent from 100 percent.

Of these adjustments, the most likely to occur is that future benefit flows (after 1991) are delayed or are not as high as currently forecast, although this could easily be more than counterbalanced by exports from the other 10 export subprojects. The analysis is less sensitive to changes in the shadow prices used, although a reduction in the foreign-exchange discount rate from 20 percent to 10 percent would still drop the rate of return to under 10 percent. Changes in the labor and energy shadow rates would only reduce the rate of return by about 1 percent.

⁴For more details on economic analysis in the Latin American sample, see Nathan Associates (1992).

Table B-1. Rate of Return and Sensitivity Analysis
(percentage)

BASELINE SCENARIO	11.9
Delay Future Benefits by One Year	7.1
Increase Costs by 10%	9.2
Increase Labor Shadow Rate by 10%	11.8
Assume No Sales Revenue Increase after 1996	7.0
Reduce Foreign Exchange Conversion Rate by 10%	9.4
Reduce Electricity Shadow Rate by 50%	13.0
Reduce Attribution from 100% to 20%	2.4

Source: Survey data; Institutional Benefit Estimates

The most significant impact on return comes from a decrease in the attribution rate. The base case assumes a 100 percent attribution rate, viewing PACT as critical to the investment. In fact, the specific firm reported that it would have gone ahead without the PACT funding and attributed only 20 points out of 100 for its success to the assistance received from ICICI (including PACT). The 100 percent attribution rate was used despite these findings to balance the exclusion of all benefits from 29 of the 30 projects supported by PACT.

Although less robust than the findings from the Caribbean Basin analysis, the findings support the conclusion that the PACT program is economically justified.

Asia Survey Findings Regarding Externality Impacts

The survey findings in the Asian countries were mixed. On one hand, the survey found that assisted firms were not more innovative than other firms surveyed; however, they were found to depend more on outside sources of information and less on information gleaned from their competitors. On the other hand, the survey confirmed that learning from other firms is an important aspect of the export expansion process. In other words, externality benefits are potentially large, but the assisted firms studied were not likely to be a major source of such benefits.

Assisted Firms Were Not More Innovative Than Other Firms Surveyed

To measure innovativeness, firms were asked questions requiring them to describe differences between their firms and others in the same product group. They were first asked whether their firms were first or among the first five firms to operate in their product line in their country (e.g., the first shoe assembly firm in Indonesia). They were then asked whether their firms differed either overall, or in technology, or in product line from their competitors.

Overall, assisted firms did not differ from other firms surveyed on any of these parameters. About 60 percent of each group (A.I.D.-assisted and other firms in the survey) believed their firms were among the first five entrants to their product group. Between 40 and 50 percent of each group stated that their firms differed overall, in technology used, and/or in products produced, but differences between the two groups were not significant at the 95 percent level. International firms did differ somewhat from local firms. Seventy-one percent of international firms believed that they were among the first five entrants, compared with 57 percent for local firms. However, only 20 percent of international firms stated that their products were different from those of their current competitors, compared with 46 percent of local firms.

Experience of Other Firms Is an Important Source of Information

Firms were questioned on the significance of what firms learn from each other. They were asked to rate a number of private and public sources of information on new products or technologies. They were also questioned on the extent to which they had relied on information regarding the performance of other firms in making their decisions to enter the markets. Finally, they were asked how many firms had entered their markets since their entries and whether they believed that these firms had benefited from the respondents' experiences.

Their answers, summarized in Table B-2, confirmed that observing one's competitors and communicating directly with other firms are important sources of information for exporters and joint venture investors.

Table B-2. External Sources of Information for Exporters

Source of Information	Percentage of Firms ^a Using Source	Percentage of Users Citing ^b High Impact
Suppliers	73	88
Partners	34	84
Other firms	45	29
Published sources	57	37
Consultant reports	34	24

Source: Survey data

^a Percentage of all firms surveyed that reported using this source of information.

^b Firms reporting that the information had a "significant" or "critical" impact on their operation as a percentage of all firms using this source of information.

Local and international firms reported using about the same sources of information on products and technologies, with the exception that local firms were far less likely to rely on information from partners than were international firms (25 percent of local firms used this source of information compared with 57 percent of international firms). Local firms were more likely than international firms to find that information on products and technologies from three sources had an impact: information gleaned from observing other firms (35 percent of local firms using this information said it had an impact, compared with 11 percent for international firms), published information (42 percent versus 20 percent), and consultant reports (31 percent versus 8 percent).

Looking more closely at the use of information gained from observing competitors, the survey found that 69 percent of the firms surveyed had studied other firms in making their entry decisions, although only 40 percent stated that the information had an impact on their operations. Only 10 percent stated that they would not have gone ahead in the absence of a reading on earlier entrants, however. Local firms were much more likely to have used information on other firms in making their decisions (46 percent stated this information had an impact) than were international firms (19 percent).

The firms surveyed generally believed that other firms had been able to learn from them as well. Half of the firms surveyed reported that several other

firms had entered their fields after they had, and 67 percent of the firms surveyed stated that later entrants had benefited from their experiences.

Spinoffs From Current Exporters Are an Important Source of Growth in the Export Sector

One of the most intriguing findings from the survey is the extent to which new exporting firms are created by employees leaving existing exporters. It is evident that this is one of the main routes to creating new exporting companies. Among all managers surveyed, 77 percent reported that they personally had earlier experience with an exporting firm (often a trading company rather than a manufacturer). One quarter of the firms surveyed stated that one or more employees had left to form companies of their own. Combined with the findings on information sources summarized above, it is evident that firms already in the business (whether partners or competitors) are the main source of information for start-up firms.

The surveyed firms also reported spin-off effects from their export operation on their production and sales operations for the domestic market. Among all firms surveyed, 62 percent stated that their export operations had had an impact on their domestic operations, through such mechanisms as improved product design, reduced costs, and introduction of new products based on experience in export markets.

Although this study did not have the resources to measure these impacts in quantitative terms, these results suggest that spin-off impacts may be quite large under the right circumstances. Common sense suggests that the "right circumstances" are those where the assisted firm is venturing into new and productive territory where the host country has an underexploited comparative advantage. In sum, this study confirms a key finding of the Caribbean Basin study: that promotion can be justified based solely on the impact on assisted firms, but that total impact is likely to be much larger if assistance is targeted strategically to encourage entry into newly emerging growth sectors.

APPENDIX C

PAPERS PREPARED FOR THE EXPORT AND INVESTMENT PROMOTION SERVICES STUDY

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