13.1 Introduction

The social analysis of a project can be carried out in two ways. One is to estimate how the income changes caused by the project are distributed, a method known as distributive analysis. This includes the reconciliation of financial, economic, and distributional appraisals. It also identifies the impact of the project on the principal objectives of the society concerned. This chapter covers the way in which the benefits and costs associated with a project are distributed among different stakeholder groups.

A distributive analysis of a project asks the following questions: Who will benefit from the project and by how much? Who will pay for the project, and how much will they pay? The sustainability of any project is heavily impacted by which parties in the project’s sphere of influence gain or lose because of it. If an influential group is expected to bear the burden of losses, then the successful implementation of the project may be hindered. The risk of a strong political opposition to the project being mobilized by the losing party is a contingency that the project’s implementers should be prepared to tackle.

Another aspect of the social analysis is concerned with how the project will help or hinder society to address its basic needs. For example, a road project may not only reduce transportation costs, but also increase the level of security in a village, or allow more children to attend school, both of which are viewed positively by society. In such cases, society may want to credit an extra net benefit (a social externality) to the project. This basic needs externality will be dealt with in Chapter 14.
This chapter begins with a discussion of distributive analysis and the impact of a project on poverty alleviation. It is followed by the description of the methodology for reconciling economic and financial values in different cases. These include: a) the case of a major expansion in the supply of a non-traded good in an undistorted market, b) the case of a non-traded good sold to a market with a unit tax, and c) the case of an importable input that is subject to a tariff. The next section provides an illustration of integrated financial, economic, and distributional analysis using three cases – a workers’ transportation project, a tomato paste production project, and the Jamuna Bridge project in Bangladesh. Concluding remarks are made in the final section.

13.2 Nature of Distributive Analysis

A traditional financial analysis examines the financial feasibility of a project from the owners’ perspective and the total investment point of view. Economic analysis evaluates the project’s feasibility in terms of the whole country or economy. A positive economic net present value (NPV) implies a positive change in the wealth of the country, while a positive financial NPV from the point of view of any particular stakeholder group indicates a positive expected change in the wealth of that group’s members.

The difference between the financial and economic values of an input or output of a project represents a benefit or a cost that accrues to some party other than the financial sponsors of the project. Such differences can be analyzed by undertaking a distributive analysis, which allocates these externalities (differences between economic and financial values) to the various parties affected. For example, a project that causes the price of a good to fall will create economic benefits that are greater than its financial revenues. This difference between the financial and economic values will represent a gain to the consumers of the output and a loss to the other producers of the good or service who are competing in the market with the project. The differences between the financial and economic values of other inputs and outputs may also arise as a result of a variety of market distortions, such as taxes and
subsidies, or because the item sold to consumers is at a price that is different from the marginal economic cost of additional supply.

Tariffs, export taxes, sales and excise taxes, production subsidies, and quantitative restrictions create common market externalities. Public goods are normally provided at prices different from their marginal economic costs. The economic values of common public services such as clean water and electricity are the maximum amounts people are willing to pay for these services. These values are often significantly higher than the financial prices people are required to pay for the services. Any of these factors will create divergences between the financial and economic prices of goods and services consumed or produced by a project.

A distributive analysis is composed of six distinct steps:

1. Identify the externalities.
2. Measure the net impact of the externalities in each market as the real economic values of resource flows minus the real financial values of resource flows.
3. Measure the values of the various externalities throughout the life of the project and calculate their present values using the economic opportunity cost of capital (EOCK).
4. Allocate the externalities across the various stakeholders of the project.
5. Summarize the distribution of the project’s externalities and net benefits according to the key stakeholders in society.
6. Reconcile the economic and financial resource flow statements with the distributional impacts.

In essence, a distributive analysis seeks to allocate the net benefits/losses generated by a project. Such an analysis is important to decision-makers as it allows them to estimate the impact of particular projects on segments of society, and to predict which groups will be net beneficiaries and which will be net losers.

For example, a project is especially designed to address poverty
When the project reduces the price of a good or service, the demanders of the output can acquire the good at a lower price. The net benefit will be identified and quantified in the distributive analysis. If the poor are the demanders, this project will have a poverty alleviation impact. In the case of water, the willingness of the poor to pay water vendors is often fairly high because water is a necessity. Often the poor, with limited access to water, are paying more than the better-off demanders for marginal supplies of water. Thus, a new project that increases the supply of potable water may end up providing it at a lower price for everyone. But the benefit brought by this lower price may be deemed to be greater to the degree that it accrues to the poorer strata of the society, thus contributing to poverty alleviation. In order to be able to quantify this impact, it is necessary to evaluate the differences between the economic value and financial cost of the water being demanded by the various income groups.

Another channel through which a project can have an impact on the incidence of poverty is the labour market. When the lower-income groups sell their services to projects that pay a wage rate significantly above the workers’ supply prices for their labour, they are likely to be made better off by the project. The difference between the supply price of labour and the financial wage paid by the project will be measured as an externality, and this can be allocated according to the various income groups to determine whether the project has a direct impact on poverty alleviation.

### 13.3 Reconciliation of Economic and Financial Values of Project Inputs and Outputs

When the economic and corresponding financial values of variables are expressed in terms of the same numeraire, we wish to show for each variable that the economic value can be expressed as the sum of its

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1. This issue has been identified as a major reason for development assistance by the World Bank. See Wolfensohn (1997).
financial value and the total of the externalities that cause the financial
and economic values to differ. These externalities may be reflecting
things such as taxes, subsidies, changes in consumer and producer
surplus, or public good externalities.

If each of the variables is discounted using any common discount
rate (in this case, the EOCK), it must be the case that the NPV of the
economic net benefits is equal to the NPV of the financial net cash
flows plus the present value of the externalities. This relationship can
be expressed as shown in equation (13.1):

\[(13.1)\]

where \(\) is the NPV of the economic net benefits, \(\) is the
NPV of the financial net cash flows, and \(\) is the sum of the
present value of all the externalities generated by the project; all are
discounted using the same EOCK.

The following cases illustrate how this relationship holds for non-
tradable and tradable goods.

13.3.1 Expansion in the Supply of a Non-tradable Good in an
Undistorted Market

Figure 13.1 illustrates the market for a good that is the output of a
project. The project results in an increase in the supply of a non-
tradable good in a market with no tax or subsidy distortions. One
example would be a project that increases the supply of drinking water
at a lower cost, hence expanding total consumption while also reducing
the quantity generated by higher-cost plants.

**Figure 13.1:** Financial and Economic Values for Production of a
Non-tradable Good

\[\text{Details of various cases can be found in Harberger (1987).}\]
Before the project is introduced, the equilibrium price and quantity are $P_0$ and $Q_0$, respectively. $P_0$ represents the price paid for drinking water prior to the project. Introducing the project causes the supply curve to shift to the right. The price falls to $P_1$, which is the price of drinking water after the project; total demand increases to $D_1$, and the quantity supplied by others is reduced to $Q_1'$. The financial value of the output is $V$, and the economic value is $V_{EC}$. The difference between the economic and financial values is $CAB$, which is the sum of two distributional impacts: the demanders’ gain, $D_{ga}$, and other producers’ loss, $L_{PL}$.

In summary, when there are no distortions in a market, the gross value of a non-tradable good or service from a project that causes a change in the price of the good or service can be disaggregated as follows:

\[
\text{Economic value of output} = \text{financial value of output} + \text{gain in consumer surplus} - \text{loss in producer surplus}
\]

While the example assumes that there is a market-determined price
before and after the project, this could just as easily be an illustration of a public service, such as a road, before and after it has undergone a major improvement. In such a case, $P_0$ would reflect the time and operation costs (per vehicle-mile) before the project, and $P_1$ would be the sum of these costs per vehicle-mile after the project.

### 13.3.2 Non-tradable Good Sold into a Market with a Unit Tax

In this case, a distortion is introduced into the market. Figure 13.2 demonstrates the case of a non-tradable good with a unit tax. As a result of the unit tax, the demand curve facing the producer will shift downward to $D'$. Before the project is introduced to the market, the equilibrium quantity is $Q_0$, the supply price is $S_0$, and the demand price is $P_0$, which is equal to the supply price plus the unit tax. Following the introduction of the project, the quantity demanded increases to $Q_1$, the quantity supplied by producers other than the project falls to $Q_2$, and the supply and demand prices fall to $S_1$ and $P_1$, respectively. The financial value of the output is shown as $V$. The economic value is shown as $V + AEFB$, the value of resources saved through the contraction or postponement of supply by others, in addition to $(Q - AEFB)$, which is the value to consumers of the increase in the quantity demanded.

Figure 13.2: Financial and Economic Values for Production of a Non-tradable Good with a Unit Tax

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3 The illustration in this case is for a unit tax, but the same results also hold for an ad valorem tax imposed on goods or services.
The difference between the economic and financial appraisal of the project’s output in this case is equal to \((CAB + AEFB)\). Here again, \(CAB\) represents the gain in consumer surplus minus the loss in producer surplus. This is easy to see in the case of a unit tax because \((-\quad)\) must equal \((-\quad)\). Hence, the area must equal .

The area \(AEFB\) is equal to , where \(T\) stands for a unit tax, or the net gain in government revenue that results from the increased demand. The gross economic value of the output is therefore equal to the financial value \((-\quad)\) plus the change in government tax revenues \((EFBA)\) plus the increase in the consumer surplus \((-\quad)\) minus the loss in producer surplus \((-\quad)\).

Consumers gain as a result of the lower price of the good. Producers lose because of the fall in price and reduced production, and the government collects more tax revenues because of the expansion in the quantity demanded as a result of the lower price.

In summary, when the market is distorted only by a unit tax, the
The gross economic value of the output of a project can be expressed as:

\[
\text{Economic value of output} = \text{financial value of output} + \text{change in government tax revenues} + \text{increases in consumer surplus} - \text{loss in producer surplus}
\]

13.3.3 Importable Input Subject to Tariff

Figure 13.3 illustrates the case of an importable good for which the inputs are subject to a tariff at a rate of \( t \). The price of cost, insurance, and freight (CIF) is \( \), and the domestic price is \( \). The initial market equilibrium is found at the domestic price of \( \), where the quantity demanded is \( \) and the quantity supplied by domestic producers is \( \). The quantity imported is \( \). A new project now demands an additional quantity of this item as input. This addition to demand is shown as a shift in the market demand curve from \( \) to \( \).

Because it is an importable good, this increase in demand will lead to an equal increase in the quantity of the item imported of \( \). The financial cost of the additional imports is \( \), while the economic cost is \( \), where \( \) is the economic exchange rate and \( \) is the financial market exchange rate.

The difference between the economic and financial costs of the importable good can be expressed as:

\[
\]

The first term of this expression is the rate of foreign exchange premium (FEP), \( \), multiplied by the cost of the inputs purchased at world prices, \( \). This measures the externality, usually the tariff and
other tax revenues foregone, from the use of foreign exchange to purchase the input. The tariff and taxes would have been paid if the foreign exchange required for this purchase had been used to purchase other imports. The second expression is the tariff revenues paid by the project when it imports these inputs.

**Figure 13.3: Measuring the Financial and Economic Values of Inputs with Tariffs**

The net distributional impact on the government is the difference between the two effects. The government gains revenue as a result of the imposition of the tariff on the imported good in question, while it loses because the foreign exchange would otherwise have yielded some tariff revenues elsewhere. These losses are captured by the FEP.

In summary, for the case of an importable good subject to a tariff, the economic cost of the item can be expressed as follows:

Economic cost of importable input = financial cost
- gain to government from tariff revenues paid on purchase of item
loss in government revenues as a result of FEP on foreign exchange used to purchase this input

13.4 Case Illustrations of Integrated Financial, Economic, and Distributional Analysis

If each of the values for the input and output variables that make up a project are broken down into their economic, financial, and distributional components, the result can be expressed as in equation (13.1), where the economic NPV is equal to the NPV of the financial outcome of the project plus the present value of a series of distributional impacts on the various stakeholders of the project. The three projects described below illustrate the use of distributional analysis in determining the ultimate outcome of a project.

The three cases illustrate the way in which stakeholder impacts are estimated. The output of an integrated analysis identifies the key stakeholders to determine whether the project promoters are likely to face difficulties in project implementation, whether the authorities are likely to be pressured to accept a bad project, and whether the project is likely to face risks to its future sustainability. Identifying the stakeholders and the ways in which they are affected will produce project-specific results. However, the economic analysis of what affects the economic values of inputs and outputs will provide the basic data for estimating the specific stakeholder impacts. For each of the cases there is a financial cash flow table, an economic resource flow table, and a table of externalities for illustrative purposes.

13.4.1 Case A: Workers’ Transportation Project

Suppose a public enterprise is considering the purchase of a bus to transport its low-wage workers to and from work. The enterprise is located far away from the residential areas and, as a result, is having difficulty recruiting workers.
a) Basic Facts about the Workers’ Transportation Project

- The factory currently employs 20 workers.
- Workers currently use taxis at a cost of $1 each way, to and from the factory.
- The factory wants to employ a total of 40 workers, but cannot recruit any additional workers without either subsidizing transportation or paying higher wages.
- In order to attract the additional 20 workers that the enterprise wants to employ, it will have to either pay the workers more or provide a bus, for which the workers would be charged only $0.40 per trip.
- The proposal is to import a bus at a cost of $50,000. This price consists of the CIF price of $40,000 plus a tariff of 25 percent. The bus is expected to have a residual “in-use” value of $20,000 in Year 5.
- The bus will operate for 250 days per year.
- It will be necessary to employ a driver to operate and maintain the bus at a wage of $20 per day. No taxes would be paid by the driver, but it is estimated that the economic opportunity cost of employing the driver is equal to approximately 80 percent of his or her wage.
- The cost of oil and gas will be $4 per day. The conversion factor for oil and gas is estimated to be 0.60 because of the high taxes imposed on their purchase price.
- The spare parts bill is expected to be $200 per year. The tariff and taxes on spare parts are equal to 25 percent of their CIF price. The spare parts conversion factor is thus 0.80.
- The ratio of the economic exchange rate to the market exchange rate is 1.
- No income taxes are levied on the income of this public enterprise.
- The financial cost of capital to the public enterprise is 6 percent, and the EOCK is 10 percent.

b) Project Outcome

A financial, economic, and distributive appraisal of the project is
conducted to determine whether the project is feasible financially and economically, and who would gain from the investment. The first step is the financial appraisal, in which the financial cash flow from the total investment point of view is compiled (see Table 13.1). The company will obtain receipts of $8,000 per year as a result of running the bus service. This is calculated by multiplying together the price to be charged ($0.40), the number of workers who will be transported per day (40), the number of trips per day (2), and the days of operation per year (250). The final in-use value of the bus ($20,000) is given in the problem. The cash inflow over the five-year period consists of the annual receipts plus the final in-use value of the bus.

Table 13.1: Financial Cash Flow for Workers’ Transportation Project (dollars in Year 0)

<table>
<thead>
<tr>
<th></th>
<th>NPV @ 10%</th>
<th>Year 0</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cash inflow</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receipts</td>
<td>33.35</td>
<td>9</td>
<td>8,000</td>
<td>8,000</td>
<td>8,000</td>
<td>8,000</td>
<td>8,000</td>
</tr>
<tr>
<td>Final in-use value</td>
<td>12.41</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20,000</td>
</tr>
<tr>
<td>Total cash inflow</td>
<td>45.77</td>
<td>7</td>
<td>8,000</td>
<td>8,000</td>
<td>8,000</td>
<td>8,000</td>
<td>20,000</td>
</tr>
<tr>
<td><strong>Cash outflow</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital expenditures</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Bus purchase</td>
<td>40.00</td>
<td>0</td>
<td>40.00</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Tariff on bus</td>
<td>10.00</td>
<td>0</td>
<td>10.00</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating expenses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Labour</td>
<td>20.84</td>
<td>9</td>
<td>5,000</td>
<td>5,000</td>
<td>5,000</td>
<td>5,000</td>
<td>5,000</td>
</tr>
<tr>
<td>- Fuel</td>
<td>4.17</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>0</td>
</tr>
</tbody>
</table>
The financial cost of the bus is the $40,000 CIF price plus the $10,000 tariff charge. The cost of employing the worker to operate and maintain the bus is $20 per day. Multiplying this sum by the 250 days of operation per year gives $5,000 as the annual cost of operating labour. Fuel costs are obtained by multiplying the $4 per day charge by the 250 days, which gives $1,000 per year. The $200 annual cost of spare parts was given in the problem. Adding up these items produces the cash outflow for each of the five years. The net cash flow is obtained by subtracting the cash outflow from the cash inflow.

The present value of inflows, outflows, and net cash flows is obtained by discounting the respective items. The NPV of the project will be required at both the financial and economic discount rates in order for the distributive analysis to be undertaken. Therefore, both these amounts are calculated as part of the financial appraisal. The financial NPV at the financial discount rate of 6 percent is −$27,018, and the financial NPV at the economic discount rate of 10 percent is −$30,076. Note that the financial NPV at the economic discount rate is a larger negative number because the economic discount rate is higher than the financial discount rate.

The second step in the analysis is the economic appraisal, represented by the economic resource statement, as shown in Table 13.2. The economic value of the bus service to the workers is a combination of the economic benefit to previous workers plus the economic benefit to new workers. The 20 existing workers were willing to pay $1 for a one-way trip. Therefore, their economic benefit from the bus service is the same as it was previously. This amount is obtained by multiplying together the price ($1), the number of trips per day (2), the number of existing workers (20), and the number of working days per
The value of the bus trip to the new workers varies. Some on the margin would have taken the trip if the price charged had been $0.99, while at the other end of the scale, some would not have taken the trip at a price of $0.41. In order to take all the new workers into account, a weighted average of their valuations is taken to find the average price that these workers would have been willing to pay. Assuming a linear (rectangular) distribution of demand prices of these new workers, this amounts to $0.70 per trip (($1.00 + $0.40)/2). Therefore, the benefit to the additional workers of the bus service is calculated by multiplying together the price of $0.70, the number of daily trips (2), the number of new workers (20), and the 250 days of operation, which gives a total of $7,000.\(^5\) Adding up the economic benefit to previous workers ($10,000) and the economic benefit to additional workers ($7,000) gives us $17,000 as the gross economic benefit of the bus service.

The residual value of the bus in economic terms is $16,000. This is because the tariff has to be allocated to the entire life of the bus. Therefore, the residual tariff value of $4,000 has to be subtracted from the financial final in-use value of the bus of $20,000.\(^6\) By the same

\(^4\) Existing workers’ benefit is a cash saving of $0.60 per trip per individual; hence, the total saving for all workers is $6,000 per year.

\(^5\) Consumer surplus to new workers is equal to the amount by which $7,000 exceeds $4,000, i.e., $3,000 per year.

\(^6\) A conversion factor of 0.8 was used to calculate the final economic in-use value of the bus. This conversion factor was calculated by dividing the...
token, the CIF price of the bus ($40,000) is the same from the financial and economic points of view. The tariff paid on the bus is only a transfer of income from the enterprise to the government, and it is thus not included in the economic appraisal.

The economic value of labour is 80 percent of its financial value. This means that labour has a shadow price that is 80 percent of its private opportunity cost. Therefore, the economic value of labour is $4,000 per year. Fuel has a conversion factor of 0.6, so the economic price of the fuel is $600. The difference between the financial and economic prices of fuel is due to taxes that were paid on the purchase of fuel. These taxes are a transfer within the economy and are therefore not accounted for in the economic appraisal. The 0.8 conversion factor for spare parts is multiplied by the financial value ($200) to give the economic value of $160. Here again, the difference between financial and economic values can be attributed to taxes paid.

Subtracting the economic costs from the economic benefits yields the economic net benefits. Discounting these values using the economic cost of capital gives $20,974 as the present value of net economic benefits.

The final step is an appraisal of the distributional effects of the project, as presented in Table 13.3. The distributive appraisal looks at net transfers in the economy as a result of the project. The object is to determine how the net benefits of having the bus service are distributed among the various participants. In this case, the relevant impacts are on the government, the consumers (i.e., the workers who will use the service to travel to and from work), and the labour that will be hired to operate the bus. First, the present value of net benefits to consumers is

\[
\text{economic value of the bus by its financial value (i.e., } \frac{40,000}{50,000})
\]

Since the difference between the financial and economic value is $4,000, we know that this is the residual tariff value.
calculated, which is the same as saying that the change in consumer surplus is being determined. It should be remembered that the formula developed earlier requires that the present value of externalities at the economic discount rate be obtained. To calculate the present value of this benefit it is necessary to subtract the financial receipts ($8,000) from the economic receipts ($17,000) for each of the five years, giving a result of $9,000 per year. Discounting this cash flow stream using the economic cost of capital gives a present value of $37,528. This positive externality goes to bus riders.

Table 13.3: Allocation of Net Benefits for Workers’ Transportation Project (dollars in Year 0)

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Benefit to Consumers</th>
<th>Net Benefit to Government</th>
<th>Net Benefit to Labour</th>
<th>Net Benefit to Government on Taxes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$17,000</td>
<td>$10,000</td>
<td>$4,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>1</td>
<td>$15,100</td>
<td>$8,000</td>
<td>$3,600</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>$13,200</td>
<td>$6,000</td>
<td>$3,200</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>$11,300</td>
<td>$4,000</td>
<td>$2,800</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>$9,400</td>
<td>$2,000</td>
<td>$2,400</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>$7,500</td>
<td>$1,000</td>
<td>$2,000</td>
<td>$2,484</td>
</tr>
</tbody>
</table>

The transfer to the government of tariff revenue from the bus purchase is $10,000 in Year 0. However, in Year 5 the project effectively releases the bus back into the economy and recaptures $20,000, but the economy values the bus at only $16,000. This increase in the value of the bus to the economy causes a loss of tariff revenue to the government that has a present value of −$2,484. Therefore, the net tariff revenue received by the government is calculated by subtracting $2,484, the loss in tariff revenues in Year 5, from the $10,000 received in Year 0.

The transfer to labour (the bus driver) is calculated in the same way as the calculation of the present value of net benefits to consumers. The economic wage received ($4,000) is subtracted from the financial wage ($5,000) for each of the five years. Discounting this cash flow at the 10 percent economic discount rate gives a present value of $4,170. This is a positive transfer to labour, since it was included in the financial costs, but not in the economic costs.

There is also a transfer to the government as a result of taxes paid on the purchase of fuel and spare parts. In both these cases, the economic costs are lower than the financial costs. The difference between the financial and economic costs of fuel is $400 per year. The
present value of this stream is $1,668. The difference for spare parts is $40 per year. This cash flow stream has a present value of $167.

To determine the overall distributive impact of the project we need to calculate the net effects on each of the affected groups. Adding up the impacts on the government shows that it gains $9,352 as a result of the project. The workers who will use the bus gain $37,528, and the labour hired to operate the bus gains $4,170. The sum of these externalities is $51,050.

c) Reconciliation of the Project

Using equation (13.1), the previous tables can be summarized as follows:

\[ 20,974 = -30,076 + 51,050 \]

From the point of view of the bus company, this is an unfavourable project, though it appears to be favourable economically. The decision on whether or not to pursue a project where the financial and economic appraisals produce such different results will depend on whether or not there are ways to make the project attractive. It may be that the value of the marginal product of the additional workers is sufficiently greater than the wage they are paid to make it attractive for the factory owner to underwrite the financial losses of the bus. Alternatively, the government may levy taxes on the whole community to subsidize the operation of the bus because of the distributional benefits the workers who now obtain this service will receive.

13.4.2 Case B: Tomato Paste Production Project

This is a project undertaken in the Philippines that appears attractive on the basis of the results of the integrated financial and economic analysis. The plant was built in a rural area that has a suitable climate for growing tomatoes. A co-operative of small farmers was organized to
grow the tomatoes under contract with the processing plant. The financial and economic analysis shows that the economic NPV of the project is much higher than its financial NPV. The stakeholder analysis indicates that the government, the farmers, and the domestic consumers will be the main beneficiaries of this project.

a) Basic Facts about the Tomato Paste Production Project

The main features of the project are summarized below:

- The tomato paste project has an economic life of 15 years. The project is able to produce 20,200 tons of tomato paste per year. Under a contractual arrangement with the plant, 3,000 farmers are organized into co-operatives for the supply of fresh tomatoes to the plant; supply will reach about 109,000 tons at the peak of the plant’s production.
targets the domestic market.
The demands
grow at a rate of 7.7 percent during
the coming ten years.

Part of the program.
cents of the total sales from 2003 to
level of about 3.5 percent of the total
to tomato paste to shift from the import
to the export category.

This in turn

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its internal price to be
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by
its
free
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board
(
FOB
)
price instead of its CIF plus
The tariff and transport costs.

The proposal...
of $9.2 million.

The project's main
s, direct labour, energy, processing
overhead costs, packaging materials,
selling
and
administrative
expenses,
maintenance, and staff costs.
The program
jeck
emplyes
370
permanent
staff,
s

temporary

staff
during
the
high
sea
Payroll costs are the most significant.
important component of the project's scope
rating costs.

The tomato plant
will
enjoy
a
six-year
tax
holiday
an
then be subject to income taxation.
The financial real cost of capital
was estimated to be 10 percent.

The
- the FOB value of the exports, plus
- the FEP on the FOB value, minus
- the transportation costs from the factory to the port;
the benefit of the reduction in quantity imported, which is the benefit of import substitution; its economic value equals the CIF value of the previously imported quantity, plus the FEP, minus the transportation costs from the factory to the port;

- the benefits of the cutback in production by other producers, which are the savings in production inputs or resource savings for the economy.
Exchange rate is 4.5 pesos per US dollar.
The FEP is assumed to be 6 percent.
ent
of
the
financial
cost
of
foreign
exchange.

The EOC is assumed to be
b) Project Outcome

Tables 13.4, 13.5, and 13.6 summarize the financial, economic, and distributive analysis of this project. The economic outcome of the project is reconciled with the financial outcome and the expected distributional impact. All values in these tables are expressed in real pesos.

As shown in Table 13.4, the financial NPV discounted at a 10 percent rate is 74.6 million pesos. The cash flow after the project was built was projected to be positive in 2002 and to continue to be positive through to the end of the project in 2017. All cash flow values presented in the table below are expressed in real prices at the price level of 2000.

Table 13.4: Financial Cash Flow for the Tomato Paste Production Project (million pesos, in 2000 prices)

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
It can be seen from Table 13.5 that the economic appraisal of the project indicates that the project is favourable for the country. The NPV of the economic benefits is 372.37 million pesos, discounted at a real economic cost of capital of 11 percent. From an economic point of view, this project is expected to contribute positively to the overall welfare of the economy.

Table 13.5: Economic Resource Statement for the Tomato Paste Production Project (million pesos, in 2000 prices)
c) Allocation of Externalities among Stakeholders

Table 13.6 shows the distributional impacts of this project. The values in this table are calculated by taking the differences between the economic values and their financial values. These differences are obtained by subtracting the present value of the rows in Table 13.4 (financial appraisal from total investment point of view) from the corresponding present values of the rows in Table 13.5 (economic appraisal) and separating the differences into the various distributional impacts (among the main stakeholders). The NPV discounted at the economic cost of capital of the externalities generated by the project is 320.23 million pesos.

<table>
<thead>
<tr>
<th>Category</th>
<th>Sum of Total Externalities</th>
<th>Gov. Farmers</th>
<th>Consumers</th>
<th>Existing Producers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Conversion factor.
These externalities can be summarized as follows:

- The farmers will realize an additional income of 175.87 million pesos, which is the difference between the price the farmers actually receive and the economic cost of production. This higher income will be earned by the farmers from the prices they will receive for supplying fresh tomatoes to the project.

- The existing tomato paste producers will lose part of the market as a result of a decrease in the tomato paste price in the domestic market. When the project starts selling its product, this will result in a reduction in the price of tomato paste. The fall in the price will create a negative externality on existing producers by making them worse off. Therefore, the existing producers of tomato paste will lose 17.14 million pesos, which is what they would have earned from their production, once the new project entered the market.
market.

- Consumers of tomato paste will realize a positive externality of 56.01 million pesos. This positive net benefit will be generated by the reduction in the price of tomato paste and hence an increase in consumption by consumers. This is due to the fact that consumers will save money as a result of paying less for the tomato paste, which they previously paid more for, and new consumers (i.e., those who could not afford to buy before) will create additional consumption as a result of the lower price.

- On the one hand, the government will lose VAT and tariff revenue from imports as a result of the import substitution by the consumers. On the other hand, the government will gain positive benefits in the form of the FEP on the foreign exchange generated from additional exports and replaced imports, plus the VAT revenue on the expansion of domestic consumption after the project’s introduction. Overall, the government will gain a net benefit of 105.48 million pesos.

d) Reconciliation of the Project

Using equation (13.1), the tables can be summarized as follows:

\[
372.37 = 52.14 + (105.48 + 175.87 + 56.00 – 17.14)
\]

where is obtained from Table 13.4 but discounted at the EOCK.

13.4.3 Case C: Jamuna Bridge Project

The Jamuna, the Meghna, and the Padma constitute a system of rivers that physically divides Bangladesh into eastern, southwestern, and northwestern regions. Most of the major centres within each region are connected by road or rail. All the connections between regions depend
on the inland waterway transport system. The services provided at the river crossings are of poor quality, are subject to many interruptions owing to the adverse geographical and meteorological conditions, and can involve waiting times of many hours or days for freight traffic. In 1994, the Bangladesh government proposed to build a bridge over the Jamuna River to link eastern and western Bangladesh. The bridge was expected to facilitate economic growth within the country by improving the links between the relatively more developed region east of the Jamuna River and the agricultural region to the west. The project would also allow transmission of electricity and transfer of natural gas between the eastern and the western regions.

a) Basic Facts about the Jamuna Bridge Project

The main features of the project include the following:

- The previous ferry services were poor, threatening the stability of the inter-regional transportation system. The whole ferry system had reached its capacity limits, creating delays ranging from 1–8 hours for light vehicles to 30–40 hours for heavy vehicles.
- The bridge would be about 4.8 km long and 18.5 metres wide to carry four road lanes with pedestrian walkways. Two bridge-end viaducts were to be constructed, each about 128 metres long, connecting the bridge to the approach road.
- The project was expected to cost approximately $696 million, including provision for physical and price contingencies.
- Approximately $600 million in loans was to be given by bilateral and multilateral agencies to the government of Bangladesh at a nominal interest rate of 1 percent. The rest of the financing would be provided as a grant by the government.
- Implementation of the project began in 1996. The project life, for financial and economic evaluation purposes, was considered to be 50 years from 1998, when it opened to traffic.

---

7 Detailed analysis can be found in Jenkins and Shukla (1997).
• The average daily traffic in 1993 on the two relevant crossing channels (Aricha–Nagarbari and Bhuapur–Sirajganj) consisted of 271 buses, 140 light vehicles, and 770 trucks. The average annual growth rate of traffic in the bridge corridor was about 7.5 percent during the period 1986–1993. The annual traffic growth rates from 1993–1998 were estimated at 6.6 percent for buses and trucks and 8.2 percent for light vehicles. From 1998–2025, it was estimated that the bridge traffic would grow at 5 percent per year. It was assumed that there would be no further traffic increases from 2025 until the end of the 50-year period.

• The economic benefits consisted of the savings in vehicle operating costs and reduced waiting times, as well as the willingness to pay (in the form of tolls) on the part of newly generated traffic. Financial revenues would arise from the tolls charged. This bridge would not only facilitate the transport of passengers and freight, but also enable natural gas, electricity, and telecommunication links to be made across the river.
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in Bangladesh (Jen)
The financial real cost of capital was estimated to be 10 percent, while the EOCK was estimated to be 12.1 percent (Jenkins and El-Hifnawi, 1993).

As part of the financial and economic analysis, the option of improving the existing ferry service was considered.

*b) Project Outcomes*

The estimation of the distributional impacts of the Jamuna Bridge project was derived from the financial and economic analysis in the
same way as for the tomato paste production project mentioned above. Only a summary of the background analysis for this case will be presented here.

A comparison of the financial profitability of the bridge project (with the specified set of tolls) with the existing ferry system indicated that the financial NPV of the bridge project would be a positive 1.07 billion takas ($27 million).⁸

An economic analysis was performed to determine whether the project would be beneficial to the overall economy of Bangladesh. The analysis revealed that compared to the existing ferry system, the real economic NPV of the bridge project was 7.77 billion takas ($195 million).

When comparing the economic and financial analysis of this project, it was found that the major net beneficiaries were the truck operators, the producers and consumers of cargo, the power company, and the bus passengers. On the other hand, both the government and the aid agencies would lose, as would the ferry operators. Truck operators, shippers, and consumers would realize savings of about 31.09 billion takas, while bus passengers and light vehicle owners and passengers would gain only 1.95 and 0.63 billion takas, respectively. The existing ferry operators would incur a negative financial impact amounting to 1.84 billion takas as the ferry services were replaced by the bridge.

Table 13.7 summarizes the allocation of externalities of this project among stakeholders, all discounted at the EOCK.

Table 13.7: Allocation of Net Benefits for the Jamuna Bridge Project (million takas, in 1994 prices)

<table>
<thead>
<tr>
<th>Total Net Benefit</th>
<th>Light Vehicles Passengers</th>
<th>Bus Passengers</th>
<th>Truckers, Producers</th>
<th>Power Company</th>
<th>Government and Aid</th>
<th>Local Government</th>
<th>Ferry Operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,132</td>
<td>627.0</td>
<td>1,951.6</td>
<td>31,094.1</td>
<td>2,544.3</td>
<td>−27,700.7</td>
<td>456.9</td>
<td>−1,840</td>
</tr>
</tbody>
</table>

⁸ The taka is the unit of currency of Bangladesh. In 1994, the exchange rate was 39.8 takas/US$. 

Using equation (13.1), the analysis of this project can be summarized as follows:

\[
7,774.9 = 642.5 + 7,132.3
\]

A key feature of this project is the large amount of subsidized financing it received. The distributional analysis shows that as a consequence, the total subsidies amounted, in present value terms, to −27,700 million takas. This is the sum of the interest subsidy on the loan (19,851 million takas), the government grant (2,455 million takas), and the premium lost on the foreign exchange used to purchase tradable goods on the investment cost of the bridge (5,358 million takas).

However, the estimated benefits to truck operators, shippers, and consumers would amount to 31,094 million takas, which is more than the entire investment cost of the bridge.

These results indicate that if a tariff structure were designed that would capture the benefits received by the consumers and producers of the cargo, little or no subsidy would have been needed. Perhaps it would be desirable, for economic development and distributional reasons, to allow the users of the bridge to receive a substantial portion of the benefits from the bridge. However, in a country like Bangladesh there are many pressing social and economic needs that are not being met owing to a scarcity of resources. It is possible that the overall development impact of the $600 million in low-cost loans might have been greater if a somewhat smaller subsidy had been provided to the Jamuna Bridge project. For example, the funds might have been better used to subsidize other public investments, such as education and health, where the application of user fees may be more difficult to implement than in the case of a bridge.

When considering the potential sustainability of this bridge, in terms of maintenance and construction of access roads, it is clear that
sufficient funds could be generated by tolls to cover these costs. For this bridge, the maintenance of the river infrastructure and the construction of access roads will be critical for the success of its long-term operation.

13.5 Conclusion

The type of integrated financial, economic, and distributive analysis proposed in this chapter has a number of advantages for evaluating both public and private sector investments. First, it ensures that the economic and financial analyses are carried out in a consistent manner. If the economic and financial analyses are done correctly, the differences will be a series of distributional impacts that can be identified and measured. If the process presented in this chapter is followed, the possibility of error in completing the analysis will be substantially reduced.

Second, the clear identification of the stakeholders and how they will fare as a consequence of a project is a key ingredient in determining the likelihood of its successful implementation, as well as in prompting the authorities to consider redesigning the project so that the impact on stakeholders is more favourable. Although most projects will have negative impacts on some segments of the population, if these are clearly identified and their political strengths assessed, the likelihood of unforeseen challenges and stalled implementation may be substantially reduced.

Third, this analysis can also be used to identify the likely impact that a project will have on the incidence of poverty in particular groups. In the case of the workers’ transportation project, the employees who will benefit are likely to be from the lower end of the income distribution. In the case of the tomato paste factory, the major beneficiaries are the farmers who produce the tomatoes. As small-holders, they will tend to be from the poorer segments of society. Likewise, bus passengers, truck operators, producers, and consumers of cargo services have gained substantial benefits from the implementation of the Jamuna Bridge project.

This analysis may not address all the political economy questions
relating to what projects should be selected and implemented, but it does at least provide a quantitative basis for making judgments as to the attractiveness of a project, and helps to identify the sources of support and opposition that the project is likely to receive.

If projects are to be sustainable, they should not be subject to continued political pressure for their suspension. The stakeholder analysis, which is undertaken through the comparison of the economic and financial outcomes, provides a clear signal of the groups that are likely to promote, and those that will not support, a project. Through the identification of the fiscal and stakeholder impacts of the project, it is possible to make a more realistic assessment of successful implementation. In addition, if the project inflicts a continuous fiscal drain on the public sector budget, it is likely to be at some risk of losing this financial support in the future. Hence, such subsidies put a project’s long-term sustainability at risk.
Appendix 13A: Economic Aspects of Foreign Financing

13A.1 Introduction

Large-scale, capital-intensive projects frequently rely on foreign financing, and, as a result, the foreign-owned segment of many sectors has grown considerably. New projects either reallocate the existing foreign investment within an economy or draw incremental foreign investment into the country. Conventional methodologies for the economic appraisal of projects have usually recommended that the source of the funds used for financing of project, either domestic or foreign, be ignored. This assumption is increasingly being called into question as foreign investors and operators have increasingly dominated the private provision of public services. Many of these build–operate–transfer and build–operate–own contracts are far from being transparent capital market transactions. Hence, the form of any arrangement will have a different economic cost as it involves different flows of resources in and out of the host country. This appendix outlines a methodology for estimating the nature and magnitude of the net economic benefits that may result from the foreign financing of new investments; such net benefits should be included in the overall economic evaluation of a project.

Public concern over foreign ownership has often focused on the issue of possible foreign control of a country’s economy and interference with decision-making that would otherwise have been in the domestic economy’s best interests. Although the importance of such issues is recognized, the current examination will be limited to estimating the net economic benefits (costs) resulting from changes in the pool of capital resources available to a country owing to the use of foreign financing for the project. Negative political externalities resulting from foreign control could also add to the economic costs.

For an excellent discussion of some of the historical experience of conflict between foreign investors and sovereign governments, see Wells and Gleason (1995).
arising from changes in foreign investment, as they may cast a shadow over a project that would otherwise have created substantial net economic benefits for the country.

The economic benefits and costs of a project should initially be examined regardless of the source of financing. The EOCK should be used as the economic discount rate for evaluating the economic costs and benefits that accrue to the project over time. The EOCK is the measure of the real opportunity cost of the funds that are drawn out of the pool of capital available to the country to finance investments. This pool of capital will include both domestic and foreign-owned funds.

From a global perspective, if a new investment opportunity is financed from foreign sources, the net economic benefits from the project (discounted by the EOCK) are going to be shared not only by the government \((g)\) and the other residents of the country \((p)\) but also by foreigners \((f)\). Thus, in NPV \((\ ( )\)\) terms:

\[
B(t) - C(t) = B(g) + B(p) + B(f)
\]

where \(B\) and \(C\) represent gross benefits and costs, respectively. Benefits realized by the government \((\ ( )\)\) take the form of such items as taxes and fees paid to the treasury. Benefits realized by the foreign investors \((\ ( )\)\) comprise the debt repayment, interest, and dividend payments.

denotes the benefits accruing to the non-government sectors of the host country. All values are expressed as present values. Since the intention is to evaluate the economic performance of the project from the perspective of the host country only, it is necessary to adjust the net economic benefits for the benefits and costs realized by foreigners.

However, in order to make this adjustment in the appropriate manner, it is also necessary to ascertain whether the project has simply reallocated the existing foreign capital in the country, or whether it has attracted incremental foreign investment into the country. A normal supply function of foreign financial capital to any country has a finite elasticity. The implication is that the use of foreign-owned capital for a specific project makes additional foreign investment more expensive to
attract. Some fraction of the foreign investment for the project will thus result in a move away from foreign financing of other projects, and some fraction is likely to be an incremental addition to the total quantity of foreign financing obtained by the country. The normal cost of these funds as measured by the capital market is included in the EOCK for a country. However, the estimate of the EOCK does not capture the net economic benefits (costs) resulting from foreign investment that arise as a result of the special characteristics of the project and the idiosyncratic nature of the financial agreements that determine the ultimate return to the foreign investors.

**13A.2 Measurement of the Benefits from Incremental Foreign Investment**

Foreign investment can be considered incremental to a host country when it is specific to a project and when the project would not be undertaken unless the foreign capital was available. Furthermore, the attraction of foreign investment to the project should not affect the ability of the country to service its other foreign-owned financial obligations. This suggests that the project is not available to other foreign investors and that the project itself will generate enough incremental foreign exchange to service this investment. In economic terms, the combination of this project and its funding causes the supply curve of foreign financing to the country to shift by an equal amount to the right. In this sense, foreign financing of the project is incremental to the amount that foreigners would otherwise invest in the host country.

If the foreign investment is incremental, the host country should not be concerned over how much the foreigners put into or take out of the project. However, it should ensure that the resources it employs in the project along with the foreign capital earn an economic rate of return at least as high as they could have earned in alternative uses. This is accomplished by evaluating all resources at their economic opportunity cost and by discounting all relevant costs and benefits by the EOCK. Since our evaluation of a new investment opportunity adopts a host country point of view, we simply want to exclude and from equation (13A.1) by adding to it, as follows:
Since the incremental foreign capital ( ) also provides incremental foreign exchange, the additional foreign investment carries an additional premium (FEP) to reflect the difference between the economic opportunity cost of foreign exchange and the market exchange rate (Harberger and Jenkins, 2002; Harberger et al., 2003). By the same token, dividends, interest, and loan repayments made to foreign investors ( ) entail a loss of foreign exchange, which also results in a loss of the FEP. Foreign owners of the capital in turn do not capture the net foreign exchange externality that accrues to the host country as a result of foreign investment. As the foreign exchange externality from foreign financing is not included in the of net benefits from the project, it is necessary to add (FEP) to both sides of equation (13A.2) to yield the adjusted economic NPV ( ):

(13A.3)

The total adjustment to equation (13A.1) made necessary by incremental foreign investment, , will raise or lower the present value of net economic benefits to the host country depending on whether is positive or negative. If , for example, the stream of dividends (net of withholding tax) plus interest and debt repayment is sufficient, when discounted at the EOCK, to permit foreigners to recapture their investment and to earn a rate of return greater than the EOCK. The result is that the economic NPV from the point of view of the host country will be less after making the adjustment for the cost of incremental foreign investment than before the adjustment is made. If, after making the adjustment, it is found that the economic NPV ( ) is greater than zero, the host
country should permit the project. If, on the other hand, is less than zero, the project is going to make the country worse off, and it should not go ahead.

13A.3 The Benefit from Reallocating Foreign Investment Already Present in the Host Country

As noted above, a normal supply function of foreign financial capital to a host country has a finite elasticity. The previous section adopted the extreme assumption of allowing all the foreign investment for a project to be incremental to the host country. This section deals with the opposite extreme by assuming that foreign investment for a project results only in a reallocation of foreign investment away from other projects in the host country. If it is assumed that the project will go ahead even without the foreign investment, we then need to know whether the country is better off using the foreign capital for this specific project rather than for alternative projects.

When none of the foreign investment for the project is incremental to the host country, but only reallocates the existing pool of foreign capital resources away from other projects, equation (13A.1) must be adjusted in a different fashion. As before, the present value of the benefits foreigners receive from their investment is the stream of dividends, interest, and loan repayments, discounted at the EOCK that actually flows from the project. The relevant opportunity cost of the investment for foreigners is the stream of benefits that they would have received from the alternative investment forgone.

The benefit to foreigners from alternative investment in the host country is equal to the present value of the real (net of inflation) returns that these investments would have earned. Since foreign-owned capital is part of the host country’s capital stock, it is reasonable to expect that foreign investors would earn a rate of return roughly equal to that earned on the total capital stock in the host country. The private discount rate, which makes the present value of the net-of-tax net cash
flow to total capital equal to zero, is denoted by $Z$.\textsuperscript{10}

In the case in which the foreign investment is non-incremental, a greater-than-normal return to foreigners represents a net cost to the economy. In contrast, a foreign investor may be willing to make an investment and receive a lower-than-normal rate of return (for example, if the investment is of great strategic importance to the firm). In this case, the participation in the financing by this particular foreign investor will increase the economic NPV of the project.

The level of political risk that foreign investors face with a particular project may mean that they will require a higher- or lower-than-normal rate of return from a particular project (Wells and Gleason, 1995). There is strong evidence that foreign investors considering investing in electricity projects in some countries have required higher-than-normal rates of return owing to the perceived political risk they are likely to face in the future with such projects (Jenkins and Lim, 1998). In other cases, foreign investors might face restrictions on the length of the term of debt financing available for a project. This may mean that the price of the project’s service has to be set very high initially in order to fulfil the debt service obligations. Over time, the debt will be repaid, but the continuation of such pricing policies might cause the foreign equity holders to earn an extraordinarily high rate of return.

In either of these circumstances, the project might still have a positive economic NPV from the host country’s point of view after making the adjustment for the higher-than-usual returns that have to be paid to these particular foreign investors. In such a situation, the host country evaluators of the project should first consider alternative methods of managing the risks, or consider alternative financial structures, before giving final approval to the project.

If by investing in a specific project foreigners earn a real return just equal to the average of $Z$, the ratio ($Z$) of the present value (discounted at $r$) of the stream of foreign equity and debt invested in the project

\textsuperscript{10} For example, in the Philippines the value of $Z$ has been estimated to be approximately 9.75 percent (Jenkins and Kuo, 1998).
over the present value (discounted at ) of the foreign dividends, debt repayment and interest received (equation 13A.4) would equal 1. If this ratio \( Z \) were greater than 1, foreigners would be earning less than an

real return by investing in the project; if the ratio were less than 1, then

foreigners would be earning more than an 

\[
(13A.4)
\]

By multiplying together this ratio and the actual stream \( (t = 0,\ldots,n) \) of dividends, debt repayment, and interest received from foreigners from the project, it is possible to determine the stream of payment to foreigners, which is below, above, or equal to what the normal stream would be, \( (t = 0,\ldots,n) \).\(^{11}\) Discounting the difference between these two streams \( (\quad - \quad) \) by the EOCK for the country yields an estimate of the present value of the externality enjoyed by (or imposed on) the country because the foreign investment in this specific project will demand a return that is lower (or higher) than what is normal in the market.

Following the reasoning used in Appendix 13A.2, the total adjustment to be made in this case is to add \( \) to equation (13A.1). Hence, equation (13A.1) becomes:

\[
(13A.5)
\]

When the ratio of the present values, \( Z \), is equal to 1, the project

\(^{11}\) The stream of dividends, debt repayment, and interest received are all measured in constant dollars.
yields foreign investors just a normal return, and no adjustment to equation (13A.1) is necessary.

However, if $Z$ is greater than 1, , and therefore . This suggests that the project should receive a net benefit for paying out less to foreigners than the country would have if it had used the foreign financing for alternative investments. Since this case also implies that private investors earn less than a normal real rate of return of , it is necessary to consider some other factors before adding this net benefit to the economic externalities attributable to the project.

A critical factor in determining the rate of return that a foreign investor demands before making the investment is the economic cost of any explicit and implicit guarantees that the project or the investor receives from the country (usually the government) (Vega, 1997). The guarantees that are designed to remove risk from the perspective of the foreign investor may cover a wide range of issues. Examples include completion guarantees, loan guarantees, and the contractual allocation of the foreign exchange rate risk to either the government or consumers. These guarantees have real economic costs associated with them that are usually not explicitly accounted for in the cash flows of the project (Mason et al., 1983). Hence, while it may appear that the foreign investor is willing to make funds available at an abnormally low required rate of return, it might simply be that the government is bearing a larger proportion of the financial risks than is normal for such investments.

12 A good example of the allocation of foreign exchange rate risk to consumers can be found in the concession agreement between Metropolitan Waterworks and Sewerage System and the private contractor in the case of the privatization of the water systems in Manila. In this case, any movement in the nominal exchange rate between the peso and the currency of the loans that was greater than 2 percent from the date of the agreement would be built into the adjustment for the price of water. It is not surprising that the concessionaires borrowed large amounts of funds in Japanese yen, the currency that was likely to appreciate the most with respect to the peso.
Another factor that is often present in the foreign financing of investment projects is financing subsidies given by foreign governments to promote certain types of investments abroad. If these subsidies are included, it might appear that a host economy is receiving a substantial benefit because the project attracts this subsidized financing.

It is generally incorrect to include any foreign (or domestic) financing subsidies as a benefit (or a reduction in financing costs) to any single project. Usually, such financing subsidies are provided to countries through a quota system, whereby a country will not be able to receive more than a given amount of such subsidies over a period of time. From the point of view of the promoter of any single investment in the host country, it might appear that these foreign financing subsidies are either bringing in incremental foreign financing or are at least a reduction in the cost of foreign financing that would have been available to the host country. In both cases, it is incorrect to credit the financing subsidy provided to any single project within a country.

### 13A.4 Concluding Remarks

The central issue in the evaluation of the benefits or costs to an economy from the foreign financing of investments is determining the proportion of the inflow of foreign financing to a project that is simply a substitute for other foreign capital inflows and the proportion that represents an increase in the productive resources available to the host country. Because the economic cost of incremental and non-incremental foreign investment may be quite different, the relative size of this parameter can be a critical determinant of the economic NPV of a project.

A difficulty that plagues the empirical estimation of the proportions of the foreign investment that are incremental and non-incremental arises because the impact of today's foreign investment on the demand and supply of foreign savings need not be completed within a given period of time. In addition, the nature of the various types of financial obligations undertaken by a country will alter the impact of the inflow of foreign savings on the investment and saving decisions in the country.
over extended periods of time.

Because of the serious statistical problems that arise in the derivation of reliable estimates of the long-term effects of foreign investment on capital formation, and the plethora of unaccounted-for implicit and explicit guarantees associated with many projects, caution is warranted before crediting a project either with inducing incremental foreign investment or with securing low-cost foreign financing. In the vast majority of cases, a project that is being financed from foreign sources will simply be reallocating the total amount of foreign investment available to the country. This arises due to the constraints on a country’s ability to repay its foreign financial obligations. In such a situation, the main concern of the project evaluator is to determine whether the project is being structured in such a way (or is attracting the type of foreign investor) that will require a greater-than-normal rate of return to participate in this project. In this case, the economic analysis should reflect this higher cost and the particular financial design of the project be appropriately penalized.

Factories that are being set up in an export-processing zone can illustrate a scenario in which a project is likely to create incremental foreign investment. In such a case, the primary concern of the project analyst is to see that the domestic resources being used to accommodate this foreign investment are yielding a net return that is at least equal to the EOCK. The foreign investment coming in to finance the factory is a benefit to the country, and the flow of interest, dividends, and loan repayments are costs. The question here is whether the domestic labour and capital being employed earn a return greater than their economic opportunity cost.

Probably the most important reason for not giving a benefit to a project for non-incremental foreign investment that appears to have been made available at lower-than-normal costs is the existence of complex guarantee provisions, which are at the heart of all project financing arrangements. In such a situation, the costs of financial risk may be reflected in other charges to the project separate from the rate of interest and expected dividends. Often, the costs of risk management are being borne by the government and are not allocated in any way to the project. It is the economic costs of these guarantees that need to be the focus of the analyst’s attention.
Guarantees that are provided by a government to domestic investors may alter behaviour and damage or help a project, but the triggering of the guarantee is essentially a transfer from the government to the domestic financial institutions within the country. This could have little or no economic cost. This is not the case with guarantees made to foreign investors. When such a guarantee is exercised, the flow of funds is an outflow of economic resources. In this case, the expected economic cost to the economy is increased above the level it would be if no guarantee were given.

References


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