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AGRICULTURAL DEVELOPMENT BANKS

DISSERTATION
Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By
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* * * * * *

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CHAPTER I

INTRODUCTION

Background

Development banks have been established in the majority of under-developed countries which are interested in being able to act positively with measures to accelerate social and economic development. A series of issues of Business International indicated that in Latin America alone there were 57 public, private and mixed development banks in 25 countries and territories.¹ The World Bank, the Agency for International Development (and predecessors) and more recently the Inter-American Development Bank have been pioneers in the initiating and strengthening of development banking. The exact nature of these development banks depends upon such things as their overall goals and objectives, the scope of their activities, whether they are publicly or privately owned, and their relationship to other economic development organizations and institutions. Diamond states the development banks have taken forms so diverse that, despite frequent similarity of

¹Business International, August 28, 1964, p. 6; September 4, p. 6, and September 18, 1964, p. 7.
formal title, they often have little resemblance to each other and often have little in common.\(^2\)

Although all such institutions have been sponsored by governments which exert a varying degree of influence on their policies and operations, some are owned exclusively by government, others by private interests and still others by a combination of the two. Some are devoted to the promotion and financing of government enterprises, others exclusively to private investment and still others act in both fields. Some have broad planning functions, some can only lend and take equities and some can set up and manage enterprises on their own account. Some are concerned with the entire economy, others but with a single sector. Some are regional and others national. Ownership, sources of finance, degree of dependence on government, objectives and methods of operation differ over a broad range of possibilities.\(^3\)

As one can readily see, it is very difficult to precisely define a development bank. However, it is useful to think in terms of a functional definition such as that used by Houck, "...an institution would be classified as a development bank if it were designed to perform both banking and development functions."\(^4\) A development bank can thus be thought of as a financial institution with major responsibilities for promoting economic development.

Economic development as defined by Belshaw refers to "...a continuing social progress leading to a progressive increase in average


\(^3\)Ibid., p. 1.

output per head among the people in a society."\(^5\) We see that Belshaw measures economic development in terms of per capita output but sees the process leading to economic development as much broader, including changes in beliefs, attitudes, relationships, institutions, and organizations not usually thought of as economic. Kindleberger employs the term economic growth when referring to a physical increase in per capita output and as such keeps it separate from the more encompassing term economic development which includes also the technical and institutional arrangements by which output is increased.\(^6\) In this study economic development will be measured in terms of a per capita output concept and as such is more accurately defined as economic growth.\(^7\)

In general, development banks are established under economic and socio-political environmental conditions which on one hand are the very reason for their existence and on the other hand present obstacles which neither insure immediate nor even ultimate success. The conditions which provide the justification for a development bank are such that investment or the necessary capital for investment in sectors and/or industries within sectors considered important by economic


planners to the development of the economy have not been forthcoming nor are they expected to be in the near future. Justifiable reasons for this may lie somewhere within the relevant realm of investment decision-making criteria such as the relative productivity of capital, risk of investment, and socio-political considerations. In actuality, however, these criteria are often cited as visible evidence for investment decisions when simply lack of knowledge on the part of investors and suppliers of capital cause and perpetuate uneconomic allocation of capital. If the necessary investment and capital for investment are not forthcoming some measures must be taken to correct the deficiency. The measure often taken is the establishment of some form of development bank, with its form depending upon the nature of the investment needs. The Agency for International Development alone had provided $1.3 billion to 106 separate development banks located in 48 countries during the period September, 1951 - June, 1964.

The proportion of the population engaged in agricultural production and the per cent of national income generated in the agricultural sector are quite high in underdeveloped countries. Mellor defines the early stages of development to be those in which 60 to 80 per cent of the population is engaged in basic agricultural production and 50 per cent or more of the national income is generated in the agricultural sector.

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8 Diamond, op. cit., p. 1.

The fact that underdeveloped economic states and a high proportion of the population engaged in agricultural production go hand-in-hand is of major importance to economic planners and the resultant scope of activities of development banks. Often agriculture is the most crucial sector. There is widespread agreement that the developing countries have paid insufficient attention to raising the productivity level in the agricultural sector. Not only is such an increase needed simply to raise living standards but it is also necessary to provide the agricultural surplus required to finance increased manufacturing activity. In countries where development banks are established, agricultural capital needs are almost always either an integral part of a poly-sectorial development bank's responsibility or are provided for through a separate entity specifically called an agricultural development bank.

In order to keep the scope of the study sufficiently narrow to facilitate in-depth analysis the remainder of the discussion will be concerned only with agricultural development banks.

**The Problem**

The attempt has been made up to this point to provide a logical setting for the question of how the performance of an agricultural development bank is to be evaluated.

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This question breaks into two parts; one, how should the performance of an agricultural development bank be evaluated for internal management purposes; and two, how should the performance of an agricultural development bank be evaluated by entities external to the bank's organization. In this study attention will be focused on part two of this question. Parties external to an agricultural development bank who have an interest in its performance may be comprised of any number of different entities. Of prime importance among these various entities are the economic planners, governmental regulatory agencies, and the various national and international suppliers of funds to development banks.

The problem restated is; how can entities concerned with economic development evaluate the performance of an agricultural development bank?

**Justification of Problem**

An awareness of this problem can be gained through a review of studies and reports whose objectives were to evaluate the performance of an agricultural development bank. It is generally unclear as to how the writers of these reports relate the evaluation of the agricultural development banks to the functions they are set up to perform.

The following quotations from and comments about selected reports illustrate some of the problems encountered in evaluating the performance of agricultural development banks by professionals in the field.
Vernon C. Johnson, employed by USAID as an agricultural credit consultant to the Nigerian A.I.D. mission, summed up very well in his report the manner in which an evaluation must be made: "What is being done in the credit field, and what may be done, must be judged in light of the magnitude of the problem."\(^\text{11}\) However, when Mr. Johnson stated that the performance of the credit system may not be too poor, it still was based on the rather vague statement of the many problems involved, "...for all loans made since 1955 the default ratio is 28 per cent in money and 35 per cent in number of borrowers. No overdue loans have been completely written off as complete losses, but according to present estimates, this figure may be about 15 per cent of the revolving capital. Considering the many problems involved, this may not be too poor a record."\(^\text{12}\) This type of evaluative statement provides the reader with little basis for determining whether this is a valid judgement or not in that it fails to relate this measure of performance to the development function.

Another agricultural credit consultant to the Nigerian A.I.D. mission charged with the responsibility for appraising the situation and giving recommendations for the establishment of a new credit organization made the following comments in his report preceding his


\(^{12}\)Ibid.
list of recommendations: "...since I have been called into a territory new to me, these recommendations will be based on sound credit principles which, when implemented, have proven to bring about successful operations in other countries. However, it may be that because of social and economic customs, such principles could not be successfully implemented in Eastern Nigeria." \(^\text{13}\) The preceding quotation is not directly related to the evaluation of performance, but it is of value in pointing out the problems of relating what one says about an agricultural development bank to the environment within which it operates and the functions it performs. These statements should also serve to provide an awareness of the dangers involved in attempting to make recommendations about an agricultural credit system based upon an evaluation made without knowledge of what or how environmental factors will affect the way the system can be expected to perform.

An International Development Service team attempted to bring in the effect of the environment somewhat more definitively in their report on the National Development Bank of Ecuador, "Considering the adverse conditions of the economic, political, and social situation in which the Bank has been operating, and the high risks in agriculture, this record of non-recoverable portfolio is favorable when compared

with losses by other institutions of agricultural credit. This team did not identify any of these other banks but one must assume they were referring to agricultural development banks in some of the other underdeveloped countries in the 2.5 per cent loss rate mentioned for the Ecuadorian National Development Bank for the 1945-61 period. They failed, however, to relate specifically how this affected the performance of the other main function performed by the bank, that of economic development.

The intent in citing these various reports is not to convey the impression that these consultants were incompetent but rather to point out the difficulties faced by experienced and able consultants in evaluating the relative performance of agricultural development banks in a definitive manner.

It should be noted that the insertion of statistics in a report does not necessarily make the report more definitive than a completely descriptive report. It is essential that the relationship of these statistics be set forth in a meaningful evaluative framework with the significance of their magnitudes to the performance of the agricultural development bank demonstrated.

This is supported by a study made by the RAND Corporation of the reports published by the International Bank for Reconstruction and

---

Development as part of its work in aiding underdeveloped countries.

The study concludes that:

...if the mission reports of the IBRD are meant to be documents on which development programs and decisions can be based, then they appear to have failed to achieve that objective, except in the most broad and general terms. As historical and descriptive summaries of the present economic position of the countries, as narrative accounts of the succession of events, and as useful statistical compendia on the countries, they get high marks, but in other more important respects they fail to meet the needs for economic development planning.\(^\text{15}\)

The reports were judged with respect to the guidelines used by IBRD in preparing the reports:

The reports made no attempt to formulate a detailed blueprint for the development of the country's economy; quite apart from the desirability of flexibility and ample scope for individual initiative, the development process is too complicated, and the factual data too inadequate and inaccurate to make such blueprinting practicable. The objective of the mission reports is rather to set forth feasible development targets, to recommend the amount of investment, and directions of public investment, necessary to achieve those targets over a period of years, and to advise the government on those major economic, financial and administrative problems which must be satisfactorily solved if the recommended investment program is to be effective. A serious effort is made in all the reports to avoid, on the one hand, such a proliferation of recommendations on small technical details that the broad development pattern envisaged by the mission is obscured; and, on the other hand, recommendations of such a broad general character that they provide an inadequate guide to action.\(^\text{16}\)


The author of the RAND report agrees that there is a real advantage in trying to steer a course between detailed blueprints on the one hand and vague nostrums on the other, "...but at the same time one has a right to expect that the ‘middle way’ will be definitive, logical, and consistent." Moore's contention is that on the whole the IBRD reports have failed to do this.

From the preceding statements it can be seen that a problem does exist in the area which includes the evaluation of Agricultural Development Banks and consequently the objectives of this study are as stated in the following section.

**Objectives of Study**

The objective of this study is to develop a model for definitively judging the performance of agricultural development banks and which:

1. is comprised of measurement criteria relevant to the evaluation of an agricultural development bank's finance function;

2. is comprised of measurement criteria relevant to the evaluation of an agricultural development bank's development function;

3. relates the evaluation of an agricultural development bank's performance of its finance function and of its development function. This will be done in such a way as to arrive at an overall measure of performance, which will show the effectiveness of an agricultural development bank in increasing agricultural output with limited resources.

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17 Moore, op. cit., p. 4.
Test of the Model

The utility of the model developed will be tested by applying it to a real situation. If the application of the model to a real situation produces relevant and valuable information not obtained through other evaluative approaches a validation of the utility of the model will be obtained.

The National Development Bank of Ecuador provides an appropriate situation for testing the model. The Bank has recently been evaluated by two independent groups. Therefore, an evaluation of the performance of the National Development Bank of Ecuador using the model developed will provide an appropriate test.

The Data

The data necessary to carry out the evaluation of the National Development Bank of Ecuador have been obtained as a result of research conducted in Ecuador by the Agricultural Finance Center of the Department of Agricultural Economics, The Ohio State University. Through this research both primary and secondary data have been obtained about the agricultural credit situation in Ecuador. With respect to the primary data, a survey was conducted with interviews being obtained from 1062 Ecuadorian farmers. The sample was designed to include a representative cross-section of Ecuadorian farmers, with 284 interviews conducted in the coastal region, 270 in the interior and 508 in the Andean mountain region. Graduates and upper-class students of the agricultural schools of the University of Manabi and Central University of Quito were used to conduct the interviews.
Using information from the farmer survey to identify the main suppliers of agricultural credit, primary data were then obtained from both institutional and non-institutional suppliers of agricultural credit. Since the agriculture development bank, the National Development Bank, was listed by the majority of farmers interviewed who were obtaining credit from institutional sources, special emphasis was given to obtaining information about its operations.

**Procedure**

In Chapter II as the first step in the development of a performance model, the approach used in measuring the performance of United States banking institutions will be considered. This overview will be expanded to establish how these standards have influenced the approach used in evaluating the performance of agricultural development banks in underdeveloped countries. The adequacy and appropriateness of this approach will be considered in light of the agricultural development banks' responsibilities for stimulating economic development.

Chapter III will be devoted to the development of an adapted cost-benefit model for more definitively evaluating the performance of agricultural development banks in achieving their objective of economic development.

In Chapter IV the National Development Bank of Ecuador and the environment within which it operates will be described. This information will be of assistance in interpreting the results of adapted cost-benefit analysis when applied to the operations of the National
Development Bank in Chapter V. It will also help serve as a basis for judging the value of the proposed model as an evaluative technique in augmenting performance information provided through the traditional profit-oriented firm analysis approach.

The conclusions and implications, as related to agricultural development banks and development policy will be summarized in Chapter VI.
CHAPTER II

EVALUATION OF AN AGRICULTURAL DEVELOPMENT BANK
BASED UPON THE PROFIT-ORIENTED FIRM
ANALYSIS APPROACH

In this chapter the appropriateness and adequacy of the profit-oriented firm analysis approach will be considered. This approach is the one traditionally used in analysis of the business firm. The performance of agricultural development banks as well has been evaluated through this method of analysis.

The Profit Oriented Firm Analysis

Profit is the ultimate test of a firm's well being and a comprehensive indicator of management's ability to fulfill its coordinate function of decision-making and planning.  

It is possible to state the goals of a business firm in various ways, but it is generally agreed that some degree of profit and permanency is foremost in the establishment and operation of the firm regardless of the type of service it provides.  

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that literature on the analysis of the firm is based upon the basic balance sheet and profit and loss statements. These provide the factual data that are basic to an analysis of the firm. This is true regardless of whether the firm is organized for operation as a banking enterprise or some other type of business enterprise. Through this approach, regardless of whether the goals of the firm are profit maximization or just a satisfactory return, the focal point of the total analysis lies in the use of strategic relations to help point out possible reasons for the performance as measured by indicator(s) of profit and/or permanency of the firm.

The profit-oriented firm analysis approach is based upon the concepts as set forth in established economic theory of the firm; a basic assumption of which is that the objective of the firm is profit.\(^3\) Although within the modern corporate framework the profit maximization principle is regarded by many as somewhat unsatisfactory, it is still used extensively.

These various qualifications suggest that for a more complete analysis, the profit-maximization assumption should be replaced by one of preference maximization, in which the various goals, including profit maximization, could be integrated. Such an assumption would be particularly desirable in the case of uncertainty, in which case the profit-maximization rule is inadequate because the executives are confronted by a group of possible outcomes, with different degrees of uncertainty, rather than a simple profit-maximization potentiality. Further progress in economic

\(^3\) For a discussion as to the limits that micro-economic theory applies to the management decisions of the firm see Spenser and Siegelman, \textit{op. cit.}, pp. 20-42.
analysis may require such an assumption. But the complexity of the over-all analysis will be tremendously increased by replacement of the profit-maximization goal by a broader one. The authors then go on to state that throughout their analysis the assumption of the profit-maximization goal will be retained.

Application to Agricultural Development Banks

How do the above comments relate to the analysis of agricultural development banks? It was stated in Chapter I (p. 2), that the dual role of an agricultural development bank is that of performing the financial functions of lending with major responsibilities for economic development of the agricultural sector. The question remains as to whether the standard statistics and approach used in the analysis of the business firm are correctly used with respect to the evaluation of the agricultural development bank. Are the statistics obtained from the balance sheet and financial statement strategically related to provide an indication of the bank's performance of the development function as well? Whereas the business firm has goals, the achievement of which can be measured through the analysis of the financial statements of the firm; the agricultural development bank has economic development as one of its major goals, the achievement of which requires looking outside the financial statements of the agricultural development bank itself.

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Problems involved

A major problem facing the international lending agencies which sponsor development banks involves the danger of monopoly. The agricultural credit bank is likely to be the sole practical source of other than short term agricultural credit. The dangers inherent in a single development bank is that it may fall under the control of a special interest group. In addition, its management, free from any of the influences of competition, may acquire that kind of arrogance which makes it impossible for it to recognize a mistake. Such an institution, controlling as it does vast economic power relative to the economy in which it operates, might (due to ill-considered policies or mismanagement) come to be a deterrent rather than an accelerator of economic progress in its country. 5

Competition presupposes that businesses pursue their own self-interest, and it harnesses this force by their need of securing the customers’ favor. It is competition that puts the customer in this strategic position, hence its crucial character. It is the form of discipline that business units exercise over one another, under the pressure which customers exert upon the business units by virtue of their power of choosing between the offerings of rival suppliers. By

reason of this discipline, business, which is profit minded, has to become production minded as a means of earning profits dependably. 6

Unfortunately, we have yet to develop a direct means of measuring the effectiveness of an agricultural development bank's management in terms of its success as a "developer" rather than as an income earner. Lacking such means, banks tend to be judged on their financial records and balance sheets, but this is at best an imperfect basis. 7 It is only necessary to examine the kinds of information required of prospective development bank borrowers by the Agency for International Development, the Inter-American Development Bank, or the World Bank to see the importance placed on these types of performance indicators. 8 Thus, there is every pressure on an agricultural development bank's management to seek profitability and/or permanence as its goal, rather than maximum economic development. Such a bank's management is likely to base decisions upon potential profits and/or permanence for the bank rather than upon promotion of maximum economic development.

With the scarcity of development resources being what it is in underdeveloped countries the need for efficient use of these resources


7 Checchi, op. cit., p. 63.

is important. It follows that the resources channelled through an agricultural development bank should be assured of being efficiently utilized. It is felt, however, that this efficiency is measured more accurately when measured with respect to the development function directly rather than with respect to the profit criteria alone. There is basis for this on at least three counts:

1. the assumptions required for effective competition to simultaneously provide the discipline for the maximization of the welfare of society and for (maximization) of the profits of the bank are absent;¹⁰

2. the typical development bank's stated objectives include promoting economic development, hence a direct measure of achievement is essential; and

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3. Some agricultural development banks are not inclined to accept the profit motive, hence efficiency must be measured directly.\textsuperscript{11}

In the following chapter a proposed method for more directly measuring the performance of agricultural development banks and the considerations involved in its use will be presented.

\textsuperscript{11}\textsuperscript{11}During the course of research conducted with the National Development Bank of Ecuador it was found that although the main office in Quito stated that profit was a goal the branch bank managers when interviewed were not aware that there existed a need for profit within the organization as such, George Goodell et al., "An Appraisal of the Banco de Fomento Relative to Agricultural Credit in Ecuador," An unpublished report submitted to USAID/Quito, September 1, 1966, pp. 23-36.
CHAPTER III
AN ADAPTED COST-BENEFIT APPROACH FOR EVALUATING THE PERFORMANCE OF AGRICULTURAL DEVELOPMENT BANKS

In the preceding chapter the traditional profit-oriented firm analysis approach was considered for its adequacy and appropriateness in evaluating the performance of agricultural development banks. It was concluded that a more direct method for definitively measuring the performance of agricultural development banks in stimulating economic growth was desirable.

A review of literature suggests that the cost-benefit analysis approach used in resource development project evaluation might provide some insights for a method of more directly measuring the efficiency of the agricultural development bank in promoting economic growth.

Through a proper definition of all the costs involved in the extension of loans to farmers, and of the benefits derived by society in line with the objectives of an agricultural development bank, it will be possible to determine the efficiency with which the bank achieved these benefits. Therefore, it first becomes necessary to define the benefits and costs which are appropriate for use in the analysis when adapted to the circumstances peculiar to an agricultural development bank.
As already discussed, the benefits which are normally thought of as arising from the lending operations of a bank consist of the income received by the bank.

A lender's business is "selling" credit and loan services in a competitive market, and this fact has an important bearing on his loan and service policies. He must offer a competitive product to stay in business. It follows that, other things being equal, the larger the volume of loans a lender has outstanding the larger his income.1

It has also been noted that competition is not present in the case of agricultural development banks. Therefore, the following quotation does not hold in the situation dealt with in the present study:

Competition among lenders encourages them to review continually their loan policies and practices with a view to making improvements which will increase their business. It encourages lenders to keep on their toes. In general, competition helps insure against credit abuses. Most areas of the United States have enough lenders to provide a fairly competitive loan market, particularly in prosperous times.2

The preceding consideration was a major reason for needing to discard the profit criterion as a measure of the agricultural bank's success as a lender. The other and perhaps more important reason was that the goals of the agricultural development bank include promoting increased economic growth within the agricultural sector. The degree to which this objective is achieved is felt to be more correctly

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2Ibid., p. 275.
measured directly from farm output figures than indirectly through statistics on bank operations, although the latter may provide an indication of this increased output.

A Definition of Benefits Appropriate for Use with Agricultural Development Banks

In Chapter I (p. 2), increased output was defined as the measure of economic growth in the agricultural sector that would be used in this study. It is assumed in this measure that some common denominator is attached to this output for purposes of aggregating it into an overall value of increased output. In this study, as is commonly done, the agricultural output will be measured in the dollar gross farm sales figure. There is merit in using a gross sales figure in that it provides an indication, as evidenced through the market place, of the value placed on the physical output of the agricultural sector and thus provides an indication of whether the farmers are producing in line with the needs and desires of the country as a whole.

The benefits that are appropriate to use in measuring the effectiveness of an agricultural development bank are defined as follows:

Benefits derived from the making of loans by the agricultural development bank consist of the increased gross income of borrowers that can be considered a result of the loans received.
A Definition of Costs Appropriate for Use with Agricultural Development Banks

Due to the scarcity of resources available for development purposes in underdeveloped countries, the efficiency with which economic growth is achieved becomes of great importance. Thus, it is necessary to define the costs which agricultural development banks incur in promoting increased agricultural output.

Cost of making loans

The components that make up this cost depend upon the exact procedures followed by an agricultural development bank and consequently would be expected to vary between different banks. But underlying these procedures are some general principles and through all of the variation run some common practices. It could be expected then that the costs would vary due to the emphasis given to the various components of the loan-making procedure and the efficiency with which these procedures were carried out. The exception to this may be the supervised credit approach where formal managerial assistance is provided in addition to the services provided by other agricultural development banks.

In the normal process of making a loan several items of information are required:

1. formal loan application,
2. balance sheet,
3. income statement,
4. inspection report, and
5. miscellaneous records such as legal papers, etc.

The detail with which this information is obtained and the methods of obtaining it may vary between banks. It is quite possible that the balance sheet and inspection report are filled out only after a farm visit as a matter of policy in some banks but not in others. Based upon these data, then, the analysis an agricultural development bank makes of a loan consists primarily of determining how much credit should be extended, together with the repayment plan, and the collateral to be required. If the decision is to make the loan, the closing is made using instruments appropriate to the particular legal requirements and customs.

**Costs of servicing loans**

The agricultural development banks' objective with respect to servicing loans would be comprised of two related aspects:

1. that of helping the borrower make effective use of the credit, and
2. safeguarding the funds of the institution.

The amount of time spent on servicing loans varies considerably and the costs consequently would be expected to vary as well. A part of the loan procedure involves an agreement between the lender and the borrower concerning the use to be made of the loan proceeds. The lender is responsible for checking on the borrower's compliance with this agreement and on his general progress. Some modification of
mutually agreed upon plans often is advisable as conditions develop, and good business practices require that the lender keep abreast of the borrower's affairs.

Services which help the borrower and create good will usually also strengthen the loan. Notwithstanding conscientious efforts of both the lender and the borrower to forecast accurately all cash requirements, because of some modifications of plans, unusual weather, or other unforeseen conditions, the need frequently arises for additional advances. Handling these in an intelligent and businesslike manner is an important phase of loan servicing which can both strengthen the loan and build good will. The mailing or otherwise notifying the borrower of installment or due dates can be an important part of total loan success. When loans are made for cash crops or when payment is to be made the bank from cash crops, a careful check on progress and needs of the crops, and at harvest time can be an important part of the culmination of a successful loan.

Cost of loanable funds

These costs will depend upon the financial structure of the agricultural development bank and the various sources of funds available to the bank. While in many instances the total cost of capital is that of the interest cost of borrowed funds this is not always the case. Some development banks have deposit (savings and checking) facilities which comprise part of the cost. Some government, and most likely a higher proportion of private, development banks require that their equity funds placed in the bank receive a dividend. This is not
always required to be paid out in cash. Some development banks, for example, must place an amount equivalent to a dividend in the capital account.

The borrowed funds may be obtained from various sources such as:

1. private individuals and firms,
2. central banks,
3. government, and
4. various international suppliers of development funds.

Under certain conditions these funds obtained are in the nature of grants rather than of hard loans.

**Overhead costs**

Certain costs of any organization—variously called overhead, burden, or indirect costs—are not changed or directly related to the service extended or product supplied by the organization. Nevertheless, for certain managerial uses it is necessary to somehow arrive at the amount of these costs in per unit figures to be allotted to the services extended or product being produced.

With respect to a development bank these costs would be comprised of such things as:

1. indirect labor,
2. indirect materials,
3. depreciation, and
4. miscellaneous costs.
The allocation of overhead costs among the various departments within the development bank would depend upon the specific bank's organization and functions. If for example, a development bank had the responsibility for acting as a central bank agent in certain regions of the country then that portion of its costs would not be allocated to the costs of making loans.³

Cost due to loss of principal because of non-repayment of loans

This cost is of a different nature from the other costs incurred by the agricultural development bank. Whereas the bank has the ability to directly control the other costs this cost can be controlled only in an indirect manner. The extent to which banks in general have been able to control this cost has served as an indication of their success as lenders and this philosophy has, as has already been pointed out, carried over to agricultural development banks. There is perhaps valid reason for concern over this cost. Whereas it is only a very small per cent of the total cost in U.S. banking circles, both agricultural and non-agricultural, in some underdeveloped countries the

cost resulting from loans written off by the agricultural development banks becomes a major part of the total cost. 4

Another factor which could be regarded as a cost is the loss of principal due to inflation. In some of the underdeveloped countries inflation poses a serious threat to the operation of an agricultural development bank. However, whereas the previous four costs mentioned were directly related to the operation of the bank, the cost the bank would experience as a result of inflation occurring in the economy is independent of the bank itself. As such, for the purpose of measuring the bank's performance, to include a cost such as inflation—while an important and crucial factor—would penalize an agricultural development bank for conditions which affect its operation but over which it has no control.

Indirect Costs and Benefits

Although the primary concern in this study is the development banks' effectiveness in promoting economic growth within the agricultural sector, or perhaps even more narrowly, that of increasing agricultural output as measured by gross income of borrowers, it is necessary to recognize the possible additional effects of this activity on the total economy.

Since an adapted cost-benefit approach is employed in this investigation, the additional effects may logically be considered in terms of benefit-cost terminology. Definitions of costs and benefits, both direct and indirect, and explanation of their meaning are given in the following section.

Definitions of costs and benefits

**Direct costs**—"Direct costs are the value of the goods and services needed for the establishment, maintenance and operation of the project and to make the immediate products of the project available for use or sale."\(^5\)

**Direct benefits**—"Direct benefits are the value of the immediate products and services for which the direct costs were incurred."\(^6\)

**Indirect costs**—"Indirect costs are the costs of further processing and any other costs (above the direct costs) stemming from or induced by the project."\(^7\)

**Indirect benefits**—"Indirect benefits are the values added to the direct benefits as a result of activities stemming from or

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\(^6\) Ibid., pp. 8-9.

\(^7\) Ibid., pp. 8-9.
induced by the project.\(^8\) There are thus two types of indirect benefits:

1. The first class comprises those alleged to accrue in connection with the processing of the immediate products; this class is referred to as stemming from.

2. The second class comprises those benefits (and costs) alleged to accrue because expenditures by the producers of the immediate products stimulate other economic activities; this is referred to as induced by.

The argument for including this class of indirect benefits is supported on the academic level through analysis based on Keynesian economics. In practice of benefit-cost analysis, however, this class of benefits is computed regardless of underemployment among productive services in the course of general fluctuations of investment, saving, and income.\(^9\)

Economists frequently argue that indirect benefits are induced regardless of unemployment of productive services, cyclical or otherwise. Irrigation development in an arid region, for example, may induce many new economic activities.\(^10\) Under the assumptions of no

\(^8\)Ibid., pp. 8-9.


\(^10\)Ibid., p. 17.
underemployment and no change in technology and preferences, one may doubt that this increase is not for the national account. In other words, such increases are offset by decreases elsewhere in the economy. The increases may be more relevant when considering repayment of the project costs. Some new techniques of economic analysis—for example, Leontief's input-output model—may become helpful in the ex-ante identification of such induced benefits. This may be even more true for the underdeveloped countries than for the developed countries. Underdeveloped countries, unlike the developed countries have little or no excess capacity in their industry or agriculture.

Benefit-cost analysis originated for the purpose of determining economic benefits of public investment from a national point of view, and it has generally been used for that purpose. This is a fundamental point when one considers secondary benefits. The distinction between primary and secondary benefits, of course, is an artificial one from a national viewpoint. Presumably the analysis would reflect all benefits which result regardless of where they occur if one is to judge their effect on national income. As to whether "secondary" benefits should be considered depends upon the assumption of the analyst as to

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the state of the economy (or of his knowledge of the state of the economy). Whether they will be positive, negative, or zero is an empirical question regarding the condition of the economy.\textsuperscript{12}

The "complementarity effect" provides us with a new concept of "induced" investment which is more meaningful for underdeveloped economies than the conventional one, i.e., investment that is directly related to past increases in output.\textsuperscript{13}

The complementarity effect suggests that an increase in the demand for beer, for example, may not only lead to the expansion of existing brewing capacity but, at a certain point, to the start of domestic production of bottles, of barley cultivation, and to a whole chain of similar repercussions. In other words, the investment that is induced by complementarity effects may help to bring about a real transformation of an underdeveloped economy.

Theoretically the complementarity effect of induced investment is thought by Hirschman to be more satisfactory than the conventional one.


and far more relevant in the context of development problems. He states that nevertheless it is extremely difficult to give empirical content to the concept and suggests we should simply be aware that there are widely varying degrees of inducements. The way in which investment leads to other investment through complementarities and external economies is an invaluable "aid" to development that must be consciously utilized in the course of the whole development process.

The forward and backward linkage effect concepts are of additional value in conceptualizing the secondary benefits stemming from increased agricultural output due to directly productive activities. Backward linkage effects resulting from direct productive activities (DPA) are the input-provision or derived demand, i.e., every non-primary

14 Working within the Keynesian analysis we have two related concepts:

**Acceleration principle**

"Acceleration principle is the process, which shows how investment demand may be induced by growth of sales and income."

According to this law, society's needed stock of capital, whether inventory or equipment, depends primarily upon the level of income or production. Additions to the stock of capital, or what we customarily call net investment, will take place only when income is growing.

**Multiplier**

"Modern income analysis shows that an increase in net investment will increase national income by a multiplied amount--by an amount greater than itself!"

This amplified effect of investment is called the "multiplier" doctrine; the word "multiplier" itself is used for the numerical coefficient showing how great an increase in income results from each increase in investment.

\[ \text{Multiplier} = \frac{1}{1-r} \]

where \( r = \text{marginal propensity to consume or } \frac{1}{\text{MPS}} \)
economic activity, will induce attempts to supply through domestic production the inputs needed in that activity. The output-utilization or forward linkage effects says that every activity that does not by its nature cater exclusively to final demands, will induce attempts to utilize its outputs as inputs in some new activities.\(^\text{15}\)

Hirschman uses a study conducted by Chenery and Watanbe,\(^\text{16}\) where the degree of interdependence of various industries has been computed and averaged for Italy, Japan, and the United States to provide a general indication of the ranking of these industries from the point of view of backward and forward linkage effects. This is based on the condition that the commodity composition of the underdeveloped country’s output could be expected to eventually bear some resemblance to that of the averages for countries.

Within the four categories of industries established:

1. Intermediate Manufacture,
2. Final Manufacture,
3. Intermediate Primary Production, and
4. Final Primary Production,

the category "Intermediate Primary Production" is ranked third in order of importance. This is based upon a ranking by size of combined

\(^{15}\)Hirschman, _op. cit._, pp. 100-119.

\(^{16}\)H. B. Chenery and T. Watanbe, "International Comparisons of the Structure of Production," a paper to be published in Econometrica.
scores (backward plus forward linkage). Agriculture is an industry included within the "Intermediate Primary Production" category.\(^{17}\)
The characteristic of this category of industries is that of a high forward linkage and a low backward linkage. Hirschman places more importance on high backward linkage than forward linkage.\(^{18}\)

Agriculture in general, and subsistence agriculture in particular, are characterized by the scarcity of linkage effects. By definition, all primary production should exclude any substantial degree of backward linkage although the introduction of modern methods does bring with it considerable purchases of seeds, fertilizers, insecticides, and other current inputs such as various types of machines and tractors. The more primitive the agricultural activities, the more truly primary they are.\(^{19}\)

Forward linkage effects are also quite weak in agriculture. A large proportion of agricultural output is destined directly for consumption or export. Another important part is subjected to some processing in industries where the value added to the agricultural product (through milling of products such as wheat, rice, and coffee)

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\(^{17}\) Backward linkage is determined by the interdependence of the industries through purchases from other sectors (ratio of inter-industry purchases to total production). Forward linkage is determined by the interdependence of the industries through sales to other sectors (ratio or interindustry sales to total demand). Hirschman, \textit{op.cit.}, pp. 106-107.

\(^{18}\) \textit{Ibid.}, p. 116.

\(^{19}\) \textit{Ibid.}, p. 109.
is small relative to the agriculture product itself. Only a comparatively small fraction of total agricultural output of underdeveloped countries receives elaborate processing, which usually takes place outside the underdeveloped countries. However, while such primary production activities leading to exports may exert few developmental effects, they do finance imports which can become very powerful agents of development.20

Following this line of reasoning and applying cost-benefit terminology it can be concluded that the secondary benefits, both those "stemming from" and those "induced by" increased agricultural production, are not large. However, the extent to which increased agricultural production "induces" increased investment outside the agricultural sector depends upon the nature of the inputs that were responsible for this increased output.

In this study, while the importance of considering the additional effects is recognized, no empirical base will be attached to these effects. The main concern will be with increases in the direct agricultural output.

**Relationship of the Costs and Benefits**

In order to show the relationship of the direct costs and benefits as they have been defined for use in an agricultural development bank a flow chart is presented (Figure 1). The flow diagram

FIGURE 1

Total Bank Cost

DIVIDED BY

Overhead Costs Over Life of Loans

Cost of Making Loans

Cost of Servicing Loans Over Life of Loans

Cost of Available Loanable Bank Funds Over Life of Loans

Cost Due to Loss of Principal as a Result of Non-Repayment of Loans

Total Bank Cost as a Per cent of Available Loanable Bank Funds

Average Available Loanable Bank Funds

Adjusted Gross Income of Borrowers

DIVIDED BY

Change in Gross Income of Borrowers Over Life of Loans Less the Change in Gross Income of Non-Borrowers

MINUS

Change in Gross Income of Borrowers Over Life of Loans Resulting from Finances Secured from Sources Other than the Agricultural Development Bank

Total Bank Cost per Unit of Adjusted Gross Income of Borrowers

Adjusted Gross Income of Borrowers as a Per cent of Available Loanable Bank Funds

Average Available Loanable Bank Funds
facilitates working through the figure from the "Total Bank Cost per Unit of Adjusted Gross Income of Borrowers" to determine the various components that make up the costs and benefits as previously defined.

Starting with the "Total Bank Cost per Unit of Adjusted Gross Income of Borrowers" it is seen that this is the quotient of "Total Bank Cost as a Per cent of Average Available Loanable Bank Funds" and the "Adjusted Gross Income of Borrowers as a Per cent of Average Available Loanable Bank Funds."

**Equation 1**

\[
\frac{\text{Total Bank Cost}}{\text{Average Available Loanable Bank Funds}} \times \frac{\text{Adjusted Gross Income of Borrowers}}{\text{Average Available Loanable Bank Funds}} = \frac{\text{Total Bank Cost}}{\text{Adjusted Gross Income of Borrowers}}
\]

Following the benefit segment (Gross Income) back it is seen that the "Adjusted Gross Income of Borrowers" is divided by "Average Available Loanable Bank Funds."

**Equation 2**

\[
\frac{\text{Adjusted Gross Income of Borrowers}}{\text{Average Available Loanable Bank Funds}} \times 100 = \frac{\text{Adjusted Gross Income of Borrowers as a Per cent of Average Available Loanable Bank Funds}}{}
\]

This was done so that the effectiveness of the bank would be measured with respect to the total resources at its disposal rather than with those utilized. For example, if a bank is very conservative or just not aggressive it may not make full use of its available resources. Since it would be expected that banks of this type would approve only the best of the loan applications they receive, it is
possible that unless the "Adjusted Gross Income of Borrowers" is related to the banks available resources an incorrect impression of the banks' effectiveness in promoting economic growth would be obtained.

The "Adjusted Gross Income of Borrowers" is obtained by subtracting from "Change in Gross Income of Borrowers Over Life of Loans Less the Change in Gross Income of Non-Borrowers" the "Change in Gross Income of Borrowers Over Life of Loans Resulting from Finances Secured from Sources Other than the Agricultural Development Bank."

Equation 3

"Change in Gross Income of Borrowers Over Life of Loans Less the Change in Gross Income of Non-Borrowers" - "Change in Gross Income of Borrowers Over Life of Loans Resulting from Finances Secured from Sources Other than the Agricultural Development Bank" = "Adjusted Gross Income of Borrowers."

This is done so that the agricultural development bank will not receive undue credit for their effectiveness in promoting economic growth. If, for example, a bank has a policy of extending only 50 percent of the total cost of the investment, its effectiveness should not be measured by the total increased gross income of the borrowers. To do so would cause it to be ranked higher than another agricultural development bank which loaned a larger percentage of the total cost of the borrowers' investment, other things held constant.

Following the cost segment back we see that "Total Bank Cost" is divided by "Average Available Loanable Bank Funds."
Equation 4

\[
\frac{\text{Total Bank Cost}}{\text{Average Available Loanable Bank Funds}} \times 100 = \text{Total Bank Cost as a Per cent of Average Available Loanable Bank Funds}
\]

This was done so that the total bank cost would have a common denominator with adjusted gross income of borrowers, i.e., average available loanable bank funds.

The "Total Bank Cost" is obtained by adding the various costs:

1. Overhead Cost Over Life of Loans,
2. Cost of Making Loans,
3. Cost of Servicing Loans Over Life of Loans,
4. Cost of Available Loanable Funds Over Life of Loans, and
5. Cost Due to Loss of Principal as a Result of Non-repayment of Loans.

Equation 5

\[
\text{Total Bank Cost} = \text{Overhead Cost Over Life of Loans} + \text{Cost of Making Loans} + \text{Cost of Servicing Loans Over Life of Loans} + \text{Cost of Available Loanable Bank Funds Over Life of Loans} + \text{Cost Due to Loss of Principal as a Result of Non-repayment of Loans}.
\]

It is possible to look at the component costs to determine the relationships that exist. This would appear to be especially true with respect to the relationships one might expect to find between the costs of making and servicing of loans and the resultant cost, that of cost due to loss of principal as a result of non-repayment of loans.

The cost of making loans is a "once only" type of cost whereas the cost of servicing the loans is a cost which continues throughout
the life of the loan. Of the four types of costs considered, the last
cost is of a different nature than the first three. The cost incurred
by the bank due to the non-repayment of principal is theoretically a
function of the quality of the lending operations of the agricultural
development bank. It is further possible in connection with quality
to inject quantity of services extended. This is especially true in
an underdeveloped country where the farmer-borrower is often ill-
equipped not only with respect to capital resources but also lacks
financial and other (production, marketing) managerial skills.

The various types of lending operations conducted by agricultural
development banks can be delineated with respect to the services pro-
vided. One, there is the agricultural development bank which offers
to extend loans to farmers which are found acceptable without re-
quiring formal financial or other managerial assistance by the bank;
two, the agricultural development bank which offers to extend loans
which are found acceptable with the provision of some formal financial
managerial assistance; and three, the agricultural development bank
which offers to extend loans which are found acceptable on the basis
of both formal financial and other managerial assistance being pro-
vided the farmer by the bank. It is possible that acceptable loans
could imply sound loans, safe loans or both sound and safe loans
depending upon the emphasis given by the particular agricultural development bank to the performance of its responsibility to the development function.21

With respect to the three types of agricultural development banks mentioned above one would expect that the direct loan extension costs would vary directly with the amount of services offered along with the extension of loan funds. If the bank provides neither financial nor other managerial assistance it would be expected that the costs incurred in the making and servicing of loans would be less than for the bank providing these services. As was stated earlier the costs due to non-repayment of principal would theoretically decrease as the quality of lending services increased. It is quite possible that quantity as well as quality is an important determinant. The resultant costs, those due to non-repayment of principal, could be expected to decrease as the quantity of services extended by the bank increases.

This fact provides the basis of the argument made by proponents of a supervised credit approach for agricultural development banks in underdeveloped countries. While the term supervised credit is interpreted differently by many people the difference generally is in degree of supervision implied rather than what is meant by the term

21The definition of a sound loan is one which is expected to be productive and repayable out of income generated, while a safe loan is one which has collateral and/or income from other sources given as security sufficient for its expected repayment.

Some banks require one or the other of the above conditions, while other banks require both soundness and safeness as conditions to warrant the making of loans.
It is generally agreed that supervised credit programs of agricultural development banks are those which in a formal manner provide managerial assistance to the borrower with respect to his firm.

While acknowledging that resources available to agricultural development banks are limited, proponents of the supervised credit approach contend that the higher costs of extending and servicing loans will be balanced out by the lower costs due to non-repayment of principal. The possibility for a somewhat different cost structure is quite defendable. As already stated, however, a lower per unit cost of the lending operations of agricultural development banks is not an appropriate goal in and of itself. An appropriate goal is a lower per unit cost of increased agricultural output resulting from the bank's operation. As such the effect on the gross income of borrowers must be considered in the determination of the type of agricultural credit program which will best achieve this goal.

As was illustrated in Figure 1, both segments of the flow diagram (the benefits and the costs) go toward the final determination of what the "Bank Cost per Unit of Adjusted Gross Income of Borrowers" will be. A low positive "Bank Cost per Unit of Adjusted Gross Income of Borrowers" results from a correct relationship between the two segments. It is possible for the change in gross income of non-borrowers to be positively greater than for borrowers. This would indicate an extreme inefficiency of agricultural development bank operations while algebraically the resultant cost-benefit ratio would be quite low, consequently a positive ratio must be specified.
Utilization and Interpretation of the Adapted Cost-Benefit Analysis as Applied to Agricultural Development Banks

To this point the use of the adapted cost-benefit analysis has been discussed with respect to measuring the historical record of an agricultural development bank's performance. The ratios and the component statistics making up the ratios shown in Figure 1 provide an indication of an agricultural development bank's past performance (as it is defined in this study) when historical costs and benefits are used.

To many entities these statistics are in and of themselves of significance. For example, where the Agency for International Development has provided funds to an agricultural development bank it is interested in keeping up to date on the results achieved with these funds. Also, where government appropriations to the agricultural development bank are dependent upon past performance these statistics would be of importance.

However, the evaluation and analysis of past performance is of more value when it can provide a basis for making decisions about future courses of action. While the knowledge that yesterday's decisions were or were not correct does not reveal what today's decisions should be, it may well suggest what course of action is most likely to be successful. Forecasts are but logical projections of past experience, and their accuracy depends largely upon the forecaster's knowledge of past events and comprehension of strategic relationship among them.
The traditional use made of cost-benefit analysis has been to determine the economics of proposed resource development projects. The following discussion is concerned with the usefulness of the cost-benefit analysis as adapted for use with agricultural development banks.

Provided that the statistics which are used in Figure 1 were available for a number of successive periods it would be possible to determine the agricultural development bank's progress in the field of development lending. Analysis of the various components that make up the costs and benefits may prove to be quite valuable in identifying strategic relationships which exist between the functions which these costs and benefits represent and thus allow for decisions to be made which would enable a more efficient future use of agricultural development bank funds (or a lower agricultural development bank cost per unit of agricultural output).

Development requires undertaking a series of projects producing favorable effects on the flow of income. The limitation of resources compels a choice being made among these projects. Consequently, it is of interest to development agencies such as the Agency for International Development to be able to estimate what the effect will be of development funds channeled through an agricultural development bank.

In order to illustrate how the adapted cost-benefit model can be of assistance to such entities, let us assume that an agricultural development bank makes a request to receive development funds from an entity such as the Agency for International Development. In its
consideration of the request the Agency for International Development wants to estimate the effect these funds will have on economic growth of the agricultural sector within the next ten years. It will be assumed that a study is made of the agricultural development bank making the request. The study shows that the agricultural development bank's cost of its lending operation when computed as a percentage of its available loanable funds averages 10 per cent. This cost figure is comprised of the costs listed in Figure 1. The study also shows that with respect to the benefits (as defined in the present study) the gross output response of borrowers, measured in gross income, was 130 per cent of the available loanable funds of the agricultural development bank.

Based on these figures the computations made in arriving at an estimated increase in agricultural output (measured in gross income) resulting from $1,000,000 of funds provided the agricultural development bank are presented in Table 1. These estimates are based on the following assumptions:

1. the productivity of the investments made by the borrowers of the agricultural development bank will not change,

2. the additional investment made by the borrowers of the agricultural development bank is 25 per cent of the amount of the bank's available loanable funds,

3. the average length of loan made by the agricultural development bank is one year,

4. the social time preference as measured through a discount rate is 10 per cent,
TABLE 1

Increase in Agricultural Output Resulting Over a Ten-Year Period from $1,000,000 of Development Funds Channeled Through an Agricultural Development Bank

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Available Loanable Funds*</th>
<th>Productivity Factor</th>
<th>Gross Output Response of Borrowers as Measured by Gross Income</th>
<th>Additional Investment Cost of Borrowersb</th>
<th>Adjusted Gross Output as Measured by Gross Income</th>
<th>Discount Factor (10%)</th>
<th>Present Value of Adjusted Gross Output as Measured by Gross Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$950,000</td>
<td>130</td>
<td>$1,235,000</td>
<td>$237,500</td>
<td>$988,000</td>
<td>.9091</td>
<td>$ 898,191</td>
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<tr>
<td>2</td>
<td>902,500</td>
<td>130</td>
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<td>225,625</td>
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<td>.8264</td>
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<tr>
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<td>857,375</td>
<td>130</td>
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<td>147,184</td>
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<td>.3855</td>
<td>240,046</td>
</tr>
</tbody>
</table>

Total | $7,928,969                      |                     |                                                               |                                       |                                               |                       | $5,066,155                                                   |

*All costs incurred by the agricultural development bank in lending this $1,000,000 to farmers are subtracted from the million dollars. It is assumed that these costs are evenly distributed throughout the year and consequently one-half of the yearly expense can be loaned out during the year.

*bAdditional investment cost of borrowers is assumed to be 25 per cent of available loanable funds.

Source: Hypothetical data.
5. the economies of scale of the agricultural development bank will not change as a result of the additional $1,000,000.

6. all costs incurred by the agricultural development bank in lending this $1,000,000 to farmers is subtracted from the million dollars. It will be assumed that these costs are evenly distributed throughout the year and consequently one half of the yearly expense can be loaned out during the year.

In order to show the relationship of the costs and benefits to the total increase in agricultural output over a ten-year period computations based upon different cost-benefit figures are shown in Table 2. In calculating the benefits shown in Table 2 it was assumed that the agricultural development bank's cost of its lending operation when computed as a percentage of its available loanable funds averaged 20 per cent, and that the gross output response of borrowers was 150 per cent of available loanable funds of the agricultural development bank. All other assumptions remain the same.

It can be seen from Tables 1 and 2 that the present value of the increase in gross agricultural output over a ten-year period is greater under the assumptions made in Table 1. This is as one would expect in that the agricultural development bank's cost per unit of adjusted gross income of borrowers was lower under the assumptions made with respect to the computations in Table 1.

The bank's cost per unit of adjusted gross income of borrowers under assumptions used in Table 1 is:

\[
\frac{\$10}{1} \times \frac{1}{1.30} = \$0.077
\]
TABLE 2

Increase in Agricultural Output Resulting Over a Ten-Year Period from $1,000,000 of Development Funds Channeled Through an Agricultural Development Bank

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Available Loanable Funds</th>
<th>Productivity Factor</th>
<th>Average Available Loanable Funds * Productivity Factor</th>
<th>Gross Output</th>
<th>Additional Investment Cost of Borrowers a</th>
<th>Adjusted Gross Output as Measured by Gross Income</th>
<th>Present Value of Adjusted Gross Output as Measured by Gross Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$900,000</td>
<td>150</td>
<td>$900,000 * 150</td>
<td>$1,350,000</td>
<td>$225,000</td>
<td>$1,080,000</td>
<td>.9091 $981,828</td>
</tr>
<tr>
<td>2</td>
<td>810,000</td>
<td>150</td>
<td>810,000 * 150</td>
<td>1,215,000</td>
<td>202,500</td>
<td>972,000</td>
<td>.8264 803,261</td>
</tr>
<tr>
<td>3</td>
<td>729,000</td>
<td>150</td>
<td>729,000 * 150</td>
<td>1,093,500</td>
<td>182,250</td>
<td>874,800</td>
<td>.7513 657,237</td>
</tr>
<tr>
<td>4</td>
<td>656,100</td>
<td>150</td>
<td>656,100 * 150</td>
<td>984,150</td>
<td>164,025</td>
<td>787,320</td>
<td>.6830 537,740</td>
</tr>
<tr>
<td>5</td>
<td>590,490</td>
<td>150</td>
<td>590,490 * 150</td>
<td>885,735</td>
<td>147,622</td>
<td>708,588</td>
<td>.6209 439,962</td>
</tr>
<tr>
<td>6</td>
<td>531,441</td>
<td>150</td>
<td>531,441 * 150</td>
<td>797,161</td>
<td>132,860</td>
<td>637,729</td>
<td>.5645 359,998</td>
</tr>
<tr>
<td>7</td>
<td>478,800</td>
<td>150</td>
<td>478,800 * 150</td>
<td>717,000</td>
<td>119,500</td>
<td>573,600</td>
<td>.5132 294,372</td>
</tr>
<tr>
<td>8</td>
<td>430,200</td>
<td>150</td>
<td>430,200 * 150</td>
<td>645,300</td>
<td>107,550</td>
<td>516,240</td>
<td>.4665 240,825</td>
</tr>
<tr>
<td>9</td>
<td>387,180</td>
<td>150</td>
<td>387,180 * 150</td>
<td>580,770</td>
<td>90,795</td>
<td>464,166</td>
<td>.4241 197,044</td>
</tr>
<tr>
<td>10</td>
<td>348,462</td>
<td>150</td>
<td>348,462 * 150</td>
<td>522,693</td>
<td>87,116</td>
<td>418,154</td>
<td>.3855 161,198</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>$7,033,047</td>
<td></td>
<td>$4,673,465</td>
<td></td>
</tr>
</tbody>
</table>

aAll costs incurred by the agricultural development bank in lending this $1,000,000 to farmers is subtracted from the million dollars. It is assumed that these costs are evenly distributed throughout the year and consequently one-half of the yearly expense can be loaned out during the year.

bAdditional investment cost of borrowers is assumed to be 25 per cent of available loanable funds.

Source: Hypothetical data.
The bank's cost per unit of adjusted gross income of borrowers under assumptions used in Table 2 is:

\[
\frac{20}{1} \times \frac{1}{1.30} = \$133.
\]

The above per unit cost figures were computed with Equation 1 (p. 40).

The absolute differences between the present value of the adjusted gross income of borrowers (in Table 1 and Table 2) is not as large as is the absolute difference between the adjusted gross income of borrowers when the timing of the costs and benefits is not taken into account. The difference between the present value of adjusted gross income of borrowers is $392,690, while the difference when time value is not considered is $895,922. In this sense a greater value is attached to a higher output response during the early part of the ten-year period. The importance of the selection of the discount rate is thus demonstrated.

Computation of the bank's cost per unit of adjusted gross income of the borrowers on the basis of the present values of the results at the end of the ten-year period shows that under the assumptions that the computations in Table 1 are based upon the per unit cost is:

\[
\frac{769,187}{1,000,000} \times \frac{1,000,000}{5,066,155} = \$1.152
\]

while the per unit cost of the results shown in Table 2 is:

\[
\frac{865,668}{1,000,000} \times \frac{1,000,000}{4,673,465} = \$0.185.
\]
The reason for the difference between these per unit cost figures and the ones computed on pages 50 and 52 can be attributed to the fact that not all of the $1,000,000 was used in the case of either Table 1 or Table 2 computations. This in itself did not affect the per unit cost figures, but when the remaining funds were discounted back to present the result was to increase the per unit cost figures.

**Considerations about assumptions made**

How realistic are the other assumptions made which were common to the results arrived at in both Table 1 and Table 2? It would be possible to discount the benefits out to infinity or until the loan proceeds were depleted. However, it would be in most instances more useful for planning and decision-making purposes to limit the period for consideration of the results of the loan to the applicant bank to a shorter period of time. Also, when the average length of the production cycle in agriculture is considered the period of ten years would appear to be adequate.

A shorter period of time also lessens the problems involved in making assumptions about the future. Assumptions such as the productivity assumption are indeed serious when one considers the affect of new technology and the application of technology to the investments made during the ten-year period. This would be especially true for the supervised credit type of banking approach which theoretically educates the farmer-borrower to be more productive. Where there is some basis for estimating the increase in productivity of bank
borrowers there would appear to be merit in changing the per cent of gross output response during the ten-year period.

With respect to the assumptions made of the applicant's operation as a firm there can be valid questioning about the assumption of no economies of scale resulting from the injection of additional bank funds. There would generally be the factor of spreading the overhead or fixed costs over a larger amount of loanable funds. However, with respect to the variable costs there is some doubt as to whether additional loanable funds would result in greater economies. Experience in Ecuador would suggest that it is very difficult to estimate what affect additional loanable funds will have on the firm's total cost of operation, due in particular to the extremely difficult area of personnel and personnel management. A U.S. study reveals that some economies of scale do exist within United States banks when differentiated by size of assets. It is concluded, however, that the principal explanation of the lower costs of banks with larger asset size can be traced to the behavior of wage and salary payments. The larger bank finds that it is able to conduct its activities with a smaller number of employees per dollar of assets and with a work force that consists more heavily of non-official employees.\textsuperscript{22} Over the ten-year period, due to managerial skills being improved through training programs and

\textsuperscript{22} Lyle E. Gramley, A Study of Scale Economies in Banking (Kansas City, Kansas: Research Department, Federal Reserve Bank of Kansas City, 1962).
the application of new technology applicable to banking, it is reasonable to expect that improved efficiency would result within agricultural development banks.

There is, however, reason to be conservative concerning the various assumptions discussed. It was already noted that these agricultural development banks operate under environmental conditions which neither assure immediate nor even ultimate success.

How does one arrive at an appropriate discount rate which represents the opportunity cost of delayed consumption? What basis is there for selecting a discount rate appropriate for determining the present value of estimated future benefits derived from development funds channeled through an agricultural development bank?

Economists in the area of resource development have done a great deal of work on the subject of determination of appropriate discount rates to be applied to public project evaluations.

According to Otto Eckstein the choice of the interest rate for the design and evaluation of public projects is perhaps the most difficult economic problem and yet one of the most important ones faced in this field. This is especially true in view of the extreme durability and high capital intensity of most resource development projects where a low interest rate would yield an altogether different kind of program than a high interest rate. The longer the life of the

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project the more the choice of the interest rate involves fundamental social value judgments about benefits accruing to different generations and about the over-all objectives. 24

Why do governments require citizens to sacrifice current consumption in order to undertake investments that will not yield their benefits until those called upon to make the sacrifice are all dead? Can we, for example, justify public investment in dams with economic lives of one hundred or more years when structures of far less durability would perform equally well over the lifetime of all those called upon to make the sacrifices of current consumption required to undertake the investment? Private investments whose benefits materialize only after the investor's death are undertaken only because of the existence of a market through which it is possible to exchange the title to returns after one's death for consumption before one's death. But there is no way that one generation as a whole can enforce compensation by the next. 25

The above quotation is Stephan A. Marglin's preface to the question he poses, "Is there then a difference, or, rather, should there be a difference between the way we view saving vs. consumption decisions collectively and the way we view these decisions individually?" 26

He concluded by pointing out that if the marginal social rate of discount is lower than the market rate for the operation of a

24 Ibid., p. 94.


26 Ibid.
laissez-faire market, then the impact of this result in a frictionless competitive model is that the community in its collective, political capacity properly see to it—directly or indirectly—that some investment opportunities are exploited that have future returns too low to justify development by private individuals. There are two ways of carrying out this injection. The government can directly undertake public investment until further investment becomes marginal from the collective as well as unilateral point of view. Alternatively, the government can employ fiscal and monetary policy to induce private enterprise to exploit all opportunities for which the present value of the net benefits to society is positive at the marginal social rate of discount. Appropriate use of monetary operations to insure plentiful and cheap credit, coupled with subsidies and differentiated tax rates, would make socially desirable opportunities privately desirable as well. In either event the marginal social rate of discount would equal the marginal productivity of investment, and in the latter case at least the marginal social rate of discount would equal the market rate as well.

M. M. Kelso states, however, that nowhere has he come across an operational definition of the opportunity cost of deferred consumption—the social rate of time preference. In the absence of an

27 Ibid.

empirical notion of the social rate of time preference as well as whose time preference should prevail, the present marginal consumer's, the present public decision-maker's, or the imagined preferences of the next generation, what discount rate can be used? Eckstein lists four different rates:

1. the interest rate on government bonds,
2. the rate of return on private investment,
3. the opportunity cost of capital, and
4. the social rate of time preferences.

He discusses each in turn and dismisses the first three as unacceptable while selecting the last mentioned as the most appropriate. However, since he does not provide an operational definition of the social rate of time preference what it appears he favors is really an artificially low interest which will among other things reduce the bias toward short-lived projects.

The problem is somewhat lessened in the present study due to the much shorter time period with which we are concerned. As already stated a period of ten years appears to be adequate when dealing with


investments that will go toward basic agricultural production. However, it must be noted that the theoretical problems encountered are still present, only their effect will be minimized.

In this chapter the cost-benefit analysis concept has been developed as an additional evaluative means by which the performance of agricultural development banks can more definitively be measured.

In the development of the model it was necessary to define what costs and benefits would be utilized. Both in the development of the model and in the illustration of its operational characteristics it was necessary to make certain assumptions. Some of these assumptions would be necessary when the model is applied to a real situation and as such a discussion was presented of considerations involved in making certain of these assumptions.

In the next chapter, prior to applying the model to a real situation, will be described the evolution and present operations of the National Development Bank of Ecuador.

This Bank has major responsibilities given it by the government of Ecuador for promoting economic development. A description of the environment within which the Bank operates will precede the discussion of the Bank itself to help orient the reader to the situation.
CHAPTER IV

A DESCRIPTION OF THE NATIONAL DEVELOPMENT BANK OF ECUADOR AND THE ENVIRONMENT WITHIN WHICH IT OPERATES

The first part of this chapter will be devoted to a description of the environment within which the National Development Bank operates. A description of the Bank itself will then follow. This will include both the evolution and the present status of the Bank.

General Characteristics of the Ecuadorian Society

As its name implies, Ecuador is crossed by the Equator. The country lies along the Pacific Coast of South America, and shares land boundaries with Peru and Colombia.

With an area estimated to be approximately 106,508 square miles, Ecuador is among the smaller countries of South America, but geographically it is among the most variegated in the world. About one-fourth of the national territory consists of a broad, tropical coastal plain. Another quarter lies within the rugged Andes mountain system, which in Ecuador consists of two parallel ranges of mountains separated by a series of valleys. About one-half of the country lies in the sparsely populated tropical forests of the Amazon Basin. For a small country, Ecuador has a wide diversity of both landscape and climate. The great variations in altitude, together with the contact point between the warm Equatorial Current and the cold Humbolt Current
occurring along its coast make for a temperature range from tropical to frigid and for a rainfall pattern from extremely heavy to sparse.

The great bulk of the population is settled in the western half of the country—about evenly distributed between the Sierra and the coast. The Oriente (Eastern Lowlands) remains very thinly settled, for the most part by a dispersed Indian population practicing subsistence agriculture and hunting. Only a relatively few Spanish-speaking Ecuadorians, most of them settled near the new roads, share the vast wilderness with the Indians.

The Ecuadorian people, in 1962 numbering about 4.6 million, trace their descent chiefly from the Spaniards, who imposed their rule on the area in the Sixteenth Century, and from the native Indian peoples. A smaller component was created by the introduction of Negro slaves during the colonial period.

These diverse groups have lived together in the same territory, under a common rule, for more than four centuries, and to a considerable degree they have admixed. Nevertheless, they have never come to form a single people with a shared language and way of life. The Spanish language, Hispanic cultural traditions and Roman Catholic Christianity set the dominant tone of national life, but large numbers of Ecuadorians continue to speak one of the native languages (chiefly Quechua), in some cases to the total exclusion of Spanish, and live in accordance with the Indian traditions. A rigidly stratified social system, imposed during the Spanish conquest to separate the Spaniards from the Indians and the Negro slaves, continues to raise barriers of
wealth, privilege and prestige among the diverse components, even though intermarriage and the abolition of forced servitude have, to some extent, blurred the ethnic lines. Although change has been continuous, it has occurred at a slow rate.

The broad base of the society is formed by a vast lower stratum, chiefly Indian and Mestizo in racial background, but with a fairly large Negro component as well. This lower stratum is poor and politically powerless but contains great variations in traditions, language and degree or participation in national life. Both on the Coast and in the Sierra, the masses of Spanish-speaking Mestizos form a lower class of small farmers, urban workers and small merchants. Although they are poor and very poorly educated, they are generally deemed to form part of the functioning, Hispanic-oriented nation. The Quechua-speaking Indians, who form the backbone of the Sierra agrarian population, are not only poor and of low social status, but their own rigorous ethnic caste system tends to keep them from full participation in the national society.

The upper class has remained small, although it has assimilated new members as ambitious individuals have achieved power and wealth. It is by no means a unified group, for the effects of regionalism are perhaps the greatest at the upper levels of society. In effect, the country has two elites— one dominating the Sierra and centered in Quito, the other dominating the coast and centered in Guayaquil. The Sierra elite has, by long tradition, based its wealth and power on ownership of land and control of agrarian labor in a poorly
coordinated and unproductive agricultural economy. The coastal elite, largely a product of the growth of international commerce, is based economically on the cultivation of export crops and on large-scale trade.

In the past few decades this pattern has been changing. A continuing, if seldom spectacular, economic growth has brought into existence a small middle class which, as an articulate and educated segment of society not bound to the interests of the elite, has added a new political voice. New communications and transport facilities have brought the rural population into contact with the influences and goods of urban society. Efforts at expanding the educational opportunity have shown up in a growing literacy rate. In general, larger numbers of people are becoming increasingly aware of the national society within which they live. Even the Sierra Indians, for many of whom the concept of an Ecuadorian nation has never been more than a vague abstraction, are being drawn into the pattern of change. That the nation has entered a period of intensifying change is apparent at many different levels. In each national election since 1940, the register of voters has grown measurably. Increasingly, politicians must, for the sake of this expanding electorate, address themselves to questions of reform. The twin aims of economic development and reform have preoccupied every recent government.

These processes have often encountered serious impediments and have brought new problems in their wake. Although reform and development stand as the keynote of political discourse, the practical means for their implementation—the redistribution of land and the
restructuring of the taxation system for example—often arouse the
opposition of powerful interest groups.

The result has been a continuing pattern of governmental insta-
bility in which the opposition of interest groups to reform measures
and popular impatience with the slow pace of change and reform have
created serious tension. On occasion, this tension has led to such
disorder that the military establishment has overturned the legally
elected government. The latest such action on the part of the armed
forces occurred in July, 1963, when the commanders of the Navy, Army
and Air Force and the Director of the National War College deposed
President Carlos Julio Arosemena Monroy and took possession of power.
The new government called itself the Board of Military Government and
ruled in the name of the armed forces until June of 1966 when they
turned over the leadership of government to a civilian interim gov-
ernment due to pressure from various interest groups.¹

The Economy

The economy of Ecuador is based primarily on agriculture. Indus-
trial capacity is limited; and mining, so important in the other
Andean countries, contributes little to the national income. With
respect to the rest of the world, the country is an exporter of a

¹For a more complete discussion of the history and the present
society of Ecuador see Lilo Linke, Country of Contrasts (Third ed.,
New York: Oxford University Press, 1964; and Edwin E. Erickson,
narrow range of primary agricultural products and an importer of manufac-
tured goods and capital.

Ecuador's economic growth in the decade of the 1950's was ap-
preciable and paralleled an even greater expansion in exports. In the
period 1950 to 1960 the gross domestic product had increased at an
annual rate of 5 per cent, making possible a per capita growth rate
of 2 per cent. Exports, however, increased at an annual rate of 9 per
cent. In the most recent years, the growth of exports has been de-
clining, and the rate of expansion of the economy has consequently
been affected. For the future, Ecuador's three major export products;
bananas, cocoa, and coffee cannot be counted on to supply the same
basis for future growth in the economy as they did in the decade of
the 1950's. The outlook for these three exports is for an annual
growth rate of less than 5 per cent in the period to 1973, and the
expected rate of increase of the population is about 3 per cent.2

In 1965 per capita gross domestic product in Ecuador was the
equivalent of U. S. $215 of 1965. The overall growth rate for 1960-
1965 was 4.2 per cent a year at 1960 prices, or slightly lower than
the rate for the 1950-1960 period. Taking into account the 3.2 per
cent population growth, per capita G.D.P. during 1960-1965 increased
by only 1 per cent annually.3

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2 Ralph J. Watkins, Expanding Ecuador's Exports, A Commodity-by-
Commodity Study With Projections to 1973 (New York: Frederick A.

3 Socio-Economic Progress in Latin America, Social Progress Trust
Fund, Sixth Annual Report, 1966 (Washington: Inter-American Develop-
Agriculture accounted for 34 per cent of the G.D.P. in 1965, compared to 37 per cent in 1960, while the share of industry rose from 15.6 to 17.4 per cent during the same five-year period. Private services generated 29.1 and 38.7 per cent of the G.D.P. in 1960 and 1965, respectively. Government services expanded at a much faster rate than total G.D.P. during the period, and especially in 1964 and 1965. As a result, the participation of Government in the G.D.P. rose from 5.8 per cent to 6.7 per cent in 1965.

By subscribing to the 1961 Charter of Punta del Este, Ecuador joined the United States and eighteen other Western Hemisphere countries in the Alliance for Progress. Most development projects in Ecuador since adoption of the Charter of Punta del Este have been within the framework of the Alliance for Progress. The reform-minded regime that came into power in 1963 initiated economic and social policies in keeping with the principles defined in the Charter. In 1964 the government adopted the ten-year General Plan for the Economic and Social Development of Ecuador (1964-1973).

The plan covers all segments of the economy and is based on the general principle that the private sector is primarily responsible for developing production activities, such as agriculture, industry and mining, whereas the public sector will concentrate on infrastructure and remove institutional obstacles.

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Agriculture

The present-day society continues to be fundamentally rural and agricultural. The continuing significance of agriculture is illustrated by the fact that the major part of the national income and employment stems directly or indirectly from it.

Agriculture, livestock raising, forestry and fishing provided a livelihood for 56.5 per cent of the economically active population in 1962. Thirty-seven per cent of the gross domestic product was generated in this sector and accounted for 93 per cent of the value of all exports from Ecuador.  

During the period between 1950 and 1965, agricultural production lagged behind the national economy in the rate of annual increase. Most people suffer from dietary deficiencies, the elimination of which is a basic goal of the agricultural development plan. Food imports, principally wheat, edible oils and dairy products, are relatively small, but as a percentage of the total imports increased from 1.8 per cent in 1957 to 7.3 per cent in 1962.  

The unprogressive state of the agricultural sector is commonly ascribed to a highly adverse pattern of land and labor use, a low state of technology and lack of investment in agriculture. Lack of proper infrastructure, roads, transport, storage and distribution facilities, illiteracy and cultural dissimilarities also present obstacles to progress.

5Erickson, op. cit., p. 337.
6Ibid., p. 339.
In 1954, the most recent year for which comprehensive census data are available, land holdings of less than five hectares accounted for 73.1 per cent of the nation's 344,200 farms, but only 7.2 per cent of the farmland. Conversely, 64.4 per cent of arable land and pastures belonged to 2.1 per cent of landowners whose properties ranged in size from 100 hectares to several thousand. This situation was compounded by the fact that at any given time 48 per cent of farmland was idle in ten provinces of the Sierra, the heart of Ecuador's agricultural economy.  

The first steps toward positive land reform were taken in 1961, with establishment of the National Agrarian Reform Commission. It recommended specific action be taken which included redistribution of 2.5 million hectares of public and private land and the settlement of 1.8 million hectares of virgin land over a 13-year period. These recommendations were the basis for the Agrarian Reform and Colonization Law decreed in 1964, and were incorporated into the National Development Plan of Ecuador.

The broad aims of the 1964 Agrarian Reform and Colonization Law are to limit ownership to economically productive holdings, eliminate absentee ownership and semifeudal forms of tenancy and labor, and encourage productivity and conservation. Farmland not productively worked for more than three years is subject to expropriation, although owners are given a three-year grace period in which to bring land into

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7 *Social-Economic Progress in Latin America*, op. cit., p. 204.
production. Land rented for more than three years without a formal contract is also subject to expropriation. Compensation may be made in government bonds, with terms of maturity and interest rates varying according to the characteristics of the land expropriated.\(^8\)

In the Agricultural Census of 1954 it was estimated that approximately 5.1 million acres were cultivated, 3 million were in natural pasture, and 2.8 million acres were in forests and underbrush in the Coastal and Sierra agricultural regions of Ecuador. The methods of cultivation vary from archaic to modern with no well-defined line of demarcation between geographic areas, export and domestic agriculture, size of landholding or different crops with both modern and ancient practices being found within each category. Crop production, which is varied on both the large estate and the subsistence size landholding is in many cases carried on by primitive methods which have scarcely changed in centuries. In some places the ox-drawn stick plow introduced by the early Spaniards is used while the "azadon," a hoe with a large blade and a sturdy ax-like handle is the most universally employed instrument used by the small Indian farmer to cultivate his land. The use of new agricultural technology in the form of fertilizers, insecticides and pesticides, and hybrid seeds is not widespread. This may be due to the lack of knowledge on the part of the farmer and also to the lack of financial resources to adopt the use of new technology.

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\(^8\)Ibid., p. 205.
Due to the wide diversity in topography, altitude, and climatic conditions in Ecuador there is a wide range of agricultural crops produced. In the Sierra the major crops produced are barley, corn, wheat, potatoes, legumes and pyrethrum. In the Coast and in the Oriente the major crops produced are bananas, cacao, coffee, sugar-cane, rice, and cotton. Livestock raising, on a broadly varied scale, is widespread throughout the country and consists of cattle, both dairy and beef; sheep; hogs and poultry.

Banking and Credit

The credit needs of the country are served by the Central Bank, fifteen commercial banks, two mortgage banks, a development bank for the provision of agricultural credit, a housing bank and a recently organized cooperative bank. Other institutions which mobilize savings and provide credit are the Social Security Fund, the Pension Fund, the Securities Commission-National Financial Corporation, eight Mutual Home Savings and Loan Associations and a small group of insurance companies.

The Monetary Board, which is a policy-making body at the highest government level, is specifically charged with the regulation of the banking and credit system in accordance with the Monetary Law of 1948. This duty involves the formulation of rules and controls, among which are the determination of legal interest rates and the reserve ratio that must be maintained by private banks. The Monetary Board is composed of eight representatives from the National Government, private banks, and chambers of agriculture, industry and commerce with a
ninth member elected by the representatives. Among the duties of the Monetary Board is the appointment of the General Manager of the Central Bank, who is responsible to the Board. Supervision of the banking system is under the direction of the Superintendency of Banks, an autonomous agency which examines all banks at least once a year.

The Central Bank, which is subject to the jurisdiction of the Monetary Board, performs the usual functions—both domestic and international—of a Central Bank. At the domestic level, in addition to the issuance of legal tender, coins and notes, the Bank provides services to the private banking system, the Central Government, government-related agencies and the public. With respect to the private banking system the Central Bank is empowered to carry on all normal credit operations, such as the discount, rediscount, purchase and sale of bills of exchange, bank acceptances and other credit instruments. The Bank is also the holder of the required reserves of the private banks which are used as a fund for check clearance which is also operated by the Central Bank. The Central Bank holds deposits of and provides credit for the Central Government and acts as fiscal agent for the government and the autonomous agencies. It is also empowered to accept deposits from and grant short term credit directly to the public.

All of the fifteen private commercial banks except one have their main headquarters in Quito or Guayaquil with the establishment of branches and offices in the other major commercial centers throughout the country. These centers generally are the same as the provincial
It is estimated that the three largest of the fifteen banks account for more than 70 per cent of the total private banking assets. The private commercial banks may accept time and demand deposits and make non-real estate loans with or without collateral for periods up to one year and real estate loans for periods not exceeding five years. Banks that make real estate loans issue, on their own guaranty, debenture bonds bearing 10 per cent interest, which are sold to the public.

Although the private commercial banks are permitted to make non-real estate loans for up to one year for commercial, industrial or agricultural purposes, they have tended to concentrate their scarce resources in the provision of commercial credit for not more than 180 days. This type of financing accounted for 74 per cent of the total credit granted by the private commercial banks during 1965.

Because of the inadequate supply of capital, credit is expensive, and long-term funds for development purposes are difficult to obtain. Most loans are made on a short-term basis for commercial purposes. Although for some time efforts have been made to improve the credit system, positive change since 1960 has been accelerated by the re-organization of existing institutions and the establishment of new ones, such as the Cooperative Bank and the National Financial Corporation.

This then is the overall setting within which the National Development Bank of Ecuador operates in its present function of making loans to the agricultural sector.
The Evolution of the National Development Bank

The National Development Bank was established in March, 1928, as a Mortgage Bank following the recommendations made by the Kemmerer Mission. The original purpose of the Bank was to provide credit to agriculture, fishing, and industry at terms and rates of interest according to needs. The justification at that time was that agricultural loans were available from private commercial banks, private moneylenders, and local export agents only on very short terms and high rates of interest.

During the sixteen years following the organization of the Bank, some 70 per cent of the loans granted were secured by real estate mortgages. Approximately 33 per cent of the loans made were in the province of Pichincha (where Quito, the capital city of Ecuador, is located). Approximately 31 per cent of the loans made were in the province of Guayas (the capital of which is Guayaquil, the principal port city and commercial center) with the rest of the country receiving the remaining 36 per cent of the agricultural credit granted by the Bank during this period. During this period, through successive revisions of policy, an increasing amount of use was made of the chattel and crop mortgage securities. Heavy losses were sustained by the Bank in the late 1930's and early 1940's when an attempt was made to promote rice farming, especially in the Guayas Basin. Most of the rice was grown by small farmers on rented land on a yearly basis. Being unattached to the land and unused to credit operations, many of the farmers moved after the harvest and the problem of collections
proved very difficult. However, rice which was in short supply during the war years became the chief export of the country.

In July, 1944 the Mortgage Bank was reorganized as a Development Bank with branch offices being opened throughout the country. During the early 1950's the Development Bank is credited with being the main financial instrument through which the government promoted the heavy banana plantings which resulted in bananas becoming Ecuador's chief export. The volume of banana exports made Ecuador the world's largest exporter of bananas; an enviable status which is being threatened due to the revitalization of banana production in the Central American countries. The Development Bank organized in 1944 was not, however, strictly a development bank for the agricultural sector. It also had responsibilities for the granting of industrial and commercial credit. During the period, 1944-1964 the industrial and commercial credit granted represented 16.4 per cent and 6.8 per cent respectively of the total credit granted by the Development Bank. Since the passing of the new law in December, 1964, the present National Development Bank has responsibilities solely for the agricultural sector.

Under the provisions of the 1964 law, the National Development Bank is authorized to have two credit divisions; one, a Division of Banking Credit; and two, a Division of Supervised Credit. The fundamental purpose of the Division of Banking Credit is to increase the rate of economic development of the country through broad and adequate credit for crops, livestock, fishing and small cottage industry. The Division of Supervised Credits' responsibilities differ from that of
the Banking Credits only in that it provides along with the loan funds the managerial assistance necessary to qualify the loan as a sound loan. As of the present the Division of Supervised Credit is not an actively operating division within the National Development Bank's operation.

The Present Status of the National Development Bank

The National Development Bank as it now exists is a private autonomous financial entity with social and public aims. The fundamental purpose of the bank is to stimulate and accelerate the economic development of the country by means of a broad and appropriate credit activity. Although the National Development Bank is by law a private autonomous entity, the Government of Ecuador is its only stockholder.

Management and administration

The management and administration of the Bank is regulated at the uppermost echelon by a Board of Directors, an Executive Commission and the General Manager.

The Board of Directors is comprised of five members, as follows:

1. One member representing the Executive Power, who may be freely appointed and removed by the President of the Republic;

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9 Taken from a translation of the National Development Bank's Organic Law, No. 2767, Ecuador.

10 Ibid.
2. One member elected by the Monetary Board; this member must be a banker, regardless of whether or not he is an official of the Central Bank;

3. One member elected by the Chamber of Agriculture of the Coast;

4. One member elected by the Chamber of Agriculture of the Sierra; and

5. One member elected by the four members who is then designated the President of the Bank.

The Board of Directors establishes the credit policy of the Bank, coordinating it with the plans and programs for economic development approved by the National Government. For this purpose it approves the financial and investment programs of the Bank. The Board also formulates the bylaws of the Bank, establishing internal organization and indicating the rules and general requirements for credit operations, with respect to type, amount, collateral, terms, and rates of interest, within the limitations established by the Monetary Board.

The Board appoints the General Manager, the Auditor and Assistant Auditor. At the suggestion of the General Manager the Board appoints the Assistant General Manager, Auxiliary Managers, Secretary, and the Managers of the Branches.

The General Manager is in charge of overall management and supervision of the entire National Development Bank system. In addition to the main headquarters office located in Quito, the system includes 35 branches of which there is one located in each of the Provincial
Capital cities with the others located according to agricultural economic activity. Each branch has a manager who receives policy guidance and technical backstopping from the headquarters office. The branch managers report directly to the General Manager. It is the branches which actually receive and process loan applications and make collections. Only on large or unusual loans, or second renewals are they required to get approval from the main office.

The table of organization of personnel for the National Development Bank system is established by the headquarters office in Quito. The specific employees, however, are selected by the branch managers. The organizational structure is similar in all of the 35 branches, with only the number of employees differing according to the size of the branch. In each branch in addition to the manager there is an assistant manager, a chief accountant, a chief credit analyst, a chief of portfolio, a chief inspector, a chief of current accounts and paying and receiving, a secretary, an attorney, and a radio operator to maintain contact with the main office and other branch offices. The number of personnel under each of these persons depends upon the size of the branch.

Shown in Table 3 are the average ages, levels of education, years in present position, and years connected with the Bank, of the personnel in the branch banks who are in management positions. As shown the branch manager tends to be oldest, and with exception of the lawyer the best educated and has been with the bank the longest period of time. From the time in present position it would appear that the
Branch Banks have just recently retired or otherwise vacated management positions in most of the departments. The custom of promoting from within the banking system is also evident.

TABLE 3

Characteristics of the Personnel in Management Positions Within the Branch Banks of the National Development Bank as of July, 1966

<table>
<thead>
<tr>
<th>Position or Title</th>
<th>Mean Age</th>
<th>Mean Number of Years of Formal Education</th>
<th>Mean Number of Years in Present Position</th>
<th>Mean Number of Years with Bank in Other Capacity</th>
<th>Mean Number of Years with Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manager</td>
<td>45.9</td>
<td>11.8</td>
<td>4.4</td>
<td>12.9</td>
<td>17.3</td>
</tr>
<tr>
<td>Inspector (Field man)</td>
<td>45.9</td>
<td>11.5</td>
<td>6.7</td>
<td>7.4</td>
<td>14.1</td>
</tr>
<tr>
<td>Credit analyst</td>
<td>37.7</td>
<td>11.7</td>
<td>3.2</td>
<td>8.6</td>
<td>11.8</td>
</tr>
<tr>
<td>Accountant</td>
<td>41.2</td>
<td>11.2</td>
<td>4.7</td>
<td>8.8</td>
<td>13.5</td>
</tr>
<tr>
<td>Portfolio chief</td>
<td>37.7</td>
<td>10.3</td>
<td>4.1</td>
<td>8.2</td>
<td>12.3</td>
</tr>
<tr>
<td>Lawyer</td>
<td>44.4</td>
<td>18.0</td>
<td>7.0</td>
<td>1.4</td>
<td>8.4</td>
</tr>
<tr>
<td>Average</td>
<td>42.1</td>
<td>12.1</td>
<td>4.9</td>
<td>8.4</td>
<td>12.9</td>
</tr>
</tbody>
</table>


The financial condition of the National Development Bank

The authorized capital of the Bank is one billion sucres ($1,000,000,000) to be contributed wholly by the Government of Ecuador.
Paid capital and reserves constitute an amount of 496.4 million su­
cres as of December 31, 1965. Losses of an ordinary private bank
would normally be covered through a reduction of the stockholders'
equity. The net profits and losses of the National Development Bank
for years 1961-1965 are shown in Table 4.

TABLE 4
Profits and Losses of the National Development
Bank for Years 1961-1965
(in sucres)

<table>
<thead>
<tr>
<th>Year</th>
<th>Profit</th>
<th>Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961</td>
<td>$10,326,240</td>
<td></td>
</tr>
<tr>
<td>1962</td>
<td>10,162,620</td>
<td></td>
</tr>
<tr>
<td>1963</td>
<td>6,653,880</td>
<td></td>
</tr>
<tr>
<td>1964</td>
<td>3,054,240</td>
<td></td>
</tr>
<tr>
<td>1965</td>
<td>$272,735</td>
<td></td>
</tr>
</tbody>
</table>


However, since the income statements do not include the annual
subsidization from the Government of Ecuador, the Government of
Ecuador, which is the Bank's only stockholder, has been strengthening
the National Development Bank by annual additions to the equity (cap­
ital and reserves) which have exceeded the annual losses. In Table 5
is presented the annual increase in the capital and reserves of the
Bank from 1948 to 1965. As a source for capitalization, the National
### TABLE 5

**Capital and Reserves of the National Development Bank**
**During the Period 1948-1965**

*(Value in thousands of sucre)*

<table>
<thead>
<tr>
<th>Year</th>
<th>Capital</th>
<th>Reserves</th>
<th>Total</th>
<th>Index of Increase 1948 = 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>1948</td>
<td>93,676</td>
<td>15,943</td>
<td>109,619</td>
<td>100.0</td>
</tr>
<tr>
<td>1949</td>
<td>171,978</td>
<td>14,879</td>
<td>186,857</td>
<td>170.5</td>
</tr>
<tr>
<td>1950</td>
<td>192,378</td>
<td>18,358</td>
<td>210,736</td>
<td>192.2</td>
</tr>
<tr>
<td>1951</td>
<td>205,279</td>
<td>22,564</td>
<td>227,843</td>
<td>207.8</td>
</tr>
<tr>
<td>1952</td>
<td>221,617</td>
<td>24,236</td>
<td>245,853</td>
<td>224.3</td>
</tr>
<tr>
<td>1953</td>
<td>305,394</td>
<td>25,912</td>
<td>331,306</td>
<td>302.2</td>
</tr>
<tr>
<td>1954</td>
<td>313,821</td>
<td>28,677</td>
<td>342,498</td>
<td>312.4</td>
</tr>
<tr>
<td>1955</td>
<td>321,668</td>
<td>31,080</td>
<td>352,748</td>
<td>321.8</td>
</tr>
<tr>
<td>1956</td>
<td>331,523</td>
<td>32,607</td>
<td>364,130</td>
<td>332.2</td>
</tr>
<tr>
<td>1957</td>
<td>327,108</td>
<td>33,873</td>
<td>360,981</td>
<td>329.3</td>
</tr>
<tr>
<td>1958</td>
<td>325,294</td>
<td>36,872</td>
<td>362,166</td>
<td>330.4</td>
</tr>
<tr>
<td>1959</td>
<td>339,804</td>
<td>27,875</td>
<td>367,679</td>
<td>335.4</td>
</tr>
<tr>
<td>1960</td>
<td>360,660</td>
<td>28,949</td>
<td>389,609</td>
<td>355.4</td>
</tr>
<tr>
<td>1961</td>
<td>387,383</td>
<td>21,614</td>
<td>409,997</td>
<td>373.1</td>
</tr>
<tr>
<td>1962</td>
<td>406,655</td>
<td>19,095</td>
<td>425,750</td>
<td>388.4</td>
</tr>
<tr>
<td>1963</td>
<td>429,606</td>
<td>20,014</td>
<td>449,620</td>
<td>410.2</td>
</tr>
<tr>
<td>1964</td>
<td>456,845</td>
<td>16,697</td>
<td>473,542</td>
<td>432.0</td>
</tr>
<tr>
<td>1965</td>
<td>486,700</td>
<td>9,600</td>
<td>496,400</td>
<td>452.9</td>
</tr>
</tbody>
</table>

*Source: Research Department of the National Development Bank of Ecuador, and books of the National Development Bank.*
Development Bank system has received—since its creation—an average of 21 million sucres (U.S. $1.15 million dollars) annually. This subsidization is derived from the Bank's participation in import taxes, exchange and consular charges. A complete balance sheet for the National Development Bank as of December 1965 is contained in the Appendix (Appendix Table 1).

The investments of the Bank constitute a large portion of the Banks' productive assets. These investments include 100 per cent and partial ownership of various development projects such as cement plants, shipping lines, canning factories, and tourist hotels. These investments were undertaken prior to 1964, at which time the Bank's responsibilities were limited to the agricultural sector.

Status of loans outstanding

In the above section the profit and losses of the National Development Bank were those which resulted under the assumption that all loans made are repaid. A study made by the National Development Bank in 1962 showed that overdue loans represent approximately 4.9 per cent of the total credits granted by the Development Bank during the 1945-1961 period. Of these overdue loans it was estimated upon review by the Bank that approximately 50 per cent are not recoverable, or 2.5 per cent of the loans granted in the sixteen years is to be considered a loss.
An independent study by the O.S.U. Agricultural Finance Center in 1966 using a sample design came up with very similar results. The sample was designed to include not only delinquent loans but also the current loans of the Bank. In total there were 792 borrowers (loans) included in the sample with field interviews being conducted with approximately one-half of these borrowers. Based upon the results of an analysis of these loans a projection made to the total National Development Bank portfolio showed that 2.65 per cent of the total credit granted between 1945-1965 should be considered a loss.

As of December 31, 1965 the National Development Bank had $861.5 million sucres of outstanding loans. In Table 6 are presented the loans granted and the loans outstanding during the 1948-1965 period of the Banks' operation.

Purpose and terms of loans granted by the National Development Bank

Of the total volume of agricultural credit granted by the Development Bank during the 1960-1963 period, 50 per cent was assigned to crops, 34 per cent to livestock, 10 per cent to agricultural machinery, 4 per cent to land improvement and 2 per cent to transport of production. This composition in the assignment of credit has been substantially modified during the last decade. The percentage of credit volume assigned to crops has decreased since 1950, but the percentage assigned to livestock has increased during the same period.

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11 Goodell, op. cit., p. 15.
### TABLE 6

**Selected Data on the Loans Outstanding and the Loans Granted by the National Development Bank During the Period 1948-1965**

(Value in thousand of sucres)

<table>
<thead>
<tr>
<th>Year</th>
<th>Current Outstanding Loan Balance as of December 31</th>
<th>Current Outstanding Loan Index Increase 1948=100</th>
<th>Overdue Outstanding Loan Balance as of December 31</th>
<th>Overdue Outstanding Loan Index Increase 1948=100</th>
<th>Total Outstanding Loan Balance as of December 31</th>
<th>Total Outstanding Loan Index Increase 1948=100</th>
<th>Total Credit Granted Each Year</th>
<th>Index Increase 1948=100</th>
</tr>
</thead>
<tbody>
<tr>
<td>1948</td>
<td>145,086</td>
<td>100</td>
<td>138,085</td>
<td>100</td>
<td>283,171</td>
<td>100</td>
<td>185,459</td>
<td>100</td>
</tr>
<tr>
<td>1949</td>
<td>216,869</td>
<td>150</td>
<td>277,957</td>
<td>201</td>
<td>494,826</td>
<td>175</td>
<td>304,160</td>
<td>164</td>
</tr>
<tr>
<td>1950</td>
<td>203,529</td>
<td>140</td>
<td>77,406</td>
<td>56</td>
<td>280,935</td>
<td>99</td>
<td>256,447</td>
<td>138</td>
</tr>
<tr>
<td>1951</td>
<td>179,585</td>
<td>124</td>
<td>99,086</td>
<td>72</td>
<td>278,671</td>
<td>98</td>
<td>215,783</td>
<td>116</td>
</tr>
<tr>
<td>1952</td>
<td>219,422</td>
<td>151</td>
<td>94,204</td>
<td>68</td>
<td>313,626</td>
<td>111</td>
<td>256,552</td>
<td>138</td>
</tr>
<tr>
<td>1953</td>
<td>226,943</td>
<td>156</td>
<td>126,175</td>
<td>91</td>
<td>353,118</td>
<td>125</td>
<td>265,256</td>
<td>143</td>
</tr>
<tr>
<td>1954</td>
<td>252,224</td>
<td>174</td>
<td>119,212</td>
<td>86</td>
<td>371,436</td>
<td>131</td>
<td>269,141</td>
<td>145</td>
</tr>
<tr>
<td>1955</td>
<td>329,155</td>
<td>227</td>
<td>121,142</td>
<td>88</td>
<td>450,297</td>
<td>159</td>
<td>337,248</td>
<td>182</td>
</tr>
<tr>
<td>1956</td>
<td>333,775</td>
<td>230</td>
<td>144,570</td>
<td>105</td>
<td>478,345</td>
<td>169</td>
<td>327,536</td>
<td>177</td>
</tr>
<tr>
<td>1957</td>
<td>380,084</td>
<td>262</td>
<td>156,990</td>
<td>114</td>
<td>537,074</td>
<td>190</td>
<td>385,669</td>
<td>208</td>
</tr>
<tr>
<td>1958</td>
<td>381,920</td>
<td>263</td>
<td>191,123</td>
<td>138</td>
<td>573,043</td>
<td>202</td>
<td>351,958</td>
<td>190</td>
</tr>
<tr>
<td>1959</td>
<td>314,319</td>
<td>216</td>
<td>210,831</td>
<td>153</td>
<td>525,150</td>
<td>186</td>
<td>245,161</td>
<td>132</td>
</tr>
<tr>
<td>1960</td>
<td>330,587</td>
<td>228</td>
<td>205,668</td>
<td>149</td>
<td>536,055</td>
<td>189</td>
<td>241,425</td>
<td>130</td>
</tr>
<tr>
<td>1961</td>
<td>416,855</td>
<td>287</td>
<td>228,557</td>
<td>166</td>
<td>645,412</td>
<td>228</td>
<td>334,567</td>
<td>180</td>
</tr>
<tr>
<td>1962</td>
<td>387,694</td>
<td>267</td>
<td>249,989</td>
<td>181</td>
<td>637,683</td>
<td>225</td>
<td>263,341</td>
<td>142</td>
</tr>
<tr>
<td>1963</td>
<td>416,939</td>
<td>286</td>
<td>253,846</td>
<td>184</td>
<td>668,785</td>
<td>236</td>
<td>293,364</td>
<td>159</td>
</tr>
<tr>
<td>1964</td>
<td>504,769</td>
<td>348</td>
<td>249,225</td>
<td>181</td>
<td>753,994</td>
<td>266</td>
<td>376,259</td>
<td>203</td>
</tr>
<tr>
<td>1965</td>
<td>582,218</td>
<td>401</td>
<td>279,255</td>
<td>202</td>
<td>861,473</td>
<td>304</td>
<td>338,974</td>
<td>183</td>
</tr>
</tbody>
</table>

Source: Research Department of the National Development Bank of Ecuador.
During the 1960-1963 period 87.4 per cent of the agricultural loans granted by the Development Bank were granted on a one-year basis; 12.0 per cent from one to five years and 0.6 per cent on terms of more than five years.\(^\text{12}\) While data is not available to the author it would be expected that the terms of loans granted since 1963 have on the average been of longer duration. This observation is based upon the fact that in November of 1962 an agreement was reached between the National Development Bank of Ecuador and the Interamerican Development Bank whereby the Interamerican Development Bank made available to the National Development Bank $6,000,000 over a three-year period. The objectives were to provide the National Bank with funds for granting loans with terms suitable for livestock raising, farm mechanization, and land improvement.

The rate of interest charged by the National Development Bank is 8 per cent plus a 1 per cent service charge, bringing the total interest cost to 9 per cent. This is below the rate of interest charged by commercial banks. The commercial banks charge approximately 14 per cent but with the extra loan service charges the total interest cost is approximately 18 per cent.

The position of the National Development Bank in the total agricultural credit market

Up to 1945, when the system of Development Banks was created, agricultural credit depended upon commercial banks, the Mortgage Bank, [\text{12}International Development Services, Inc., \textit{op. cit.}]
and on private moneylenders. As shown in Table 7, the National Development Bank supplied the majority of the institutional agricultural credit supplied during the early 1950's. Since that time, however, while still a very important supplier of agricultural credit, the proportion of the total amount of agricultural credit granted by the National Development Bank has steadily declined. While each of the suppliers of agricultural credit increased their volume over this period of time the National Development Bank's volume grew much slower than that of the private banks or the Central Bank.

One reason for the accelerated increase by the private commercial banks in their participation in agricultural lending was a national government law that was passed in 1964. This law requires that private commercial banks maintain 15 per cent of their loan portfolios in agriculture. By the end of 1965 the private commercial banks had increased their agricultural lending to where agricultural loans made up 7.4 per cent of their loan portfolios.
<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>National Development Bank</th>
<th>Private Commercial Bank</th>
<th>Central Bank</th>
<th>Per cent Involvement in Agricultural Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>National Development Bank</td>
</tr>
<tr>
<td>1952</td>
<td>246.3</td>
<td>186.8</td>
<td>20.5</td>
<td>39.0</td>
<td>75.8</td>
</tr>
<tr>
<td>1953</td>
<td>249.5</td>
<td>195.0</td>
<td>31.2</td>
<td>23.3</td>
<td>78.2</td>
</tr>
<tr>
<td>1954</td>
<td>272.2</td>
<td>199.7</td>
<td>45.3</td>
<td>27.2</td>
<td>73.4</td>
</tr>
<tr>
<td>1955</td>
<td>349.9</td>
<td>260.6</td>
<td>53.2</td>
<td>36.1</td>
<td>74.5</td>
</tr>
<tr>
<td>1956</td>
<td>350.0</td>
<td>253.7</td>
<td>51.9</td>
<td>44.4</td>
<td>72.5</td>
</tr>
<tr>
<td>1957</td>
<td>406.1</td>
<td>301.6</td>
<td>67.7</td>
<td>36.8</td>
<td>74.3</td>
</tr>
<tr>
<td>1958</td>
<td>408.0</td>
<td>265.6</td>
<td>83.5</td>
<td>58.9</td>
<td>65.1</td>
</tr>
<tr>
<td>1959</td>
<td>323.1</td>
<td>189.5</td>
<td>93.6</td>
<td>40.0</td>
<td>58.7</td>
</tr>
<tr>
<td>1960</td>
<td>334.2</td>
<td>188.8</td>
<td>109.1</td>
<td>36.3</td>
<td>56.5</td>
</tr>
<tr>
<td>1961</td>
<td>450.9</td>
<td>234.2</td>
<td>102.5</td>
<td>114.2</td>
<td>51.9</td>
</tr>
<tr>
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<td>386.4</td>
<td>184.0</td>
<td>93.9</td>
<td>108.5</td>
<td>47.6</td>
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<td>405.2</td>
<td>201.9</td>
<td>98.9</td>
<td>104.4</td>
<td>49.8</td>
</tr>
<tr>
<td>1964</td>
<td>509.2</td>
<td>247.0</td>
<td>161.2</td>
<td>101.0</td>
<td>48.5</td>
</tr>
<tr>
<td>1965</td>
<td>736.7</td>
<td>259.6</td>
<td>344.0</td>
<td>133.1</td>
<td>35.2</td>
</tr>
</tbody>
</table>

Source: Indicadores Economicos
Junto Nacional de Planificacion y Coordinacion Economic
Ecuador
Vol. 1, No. 1, April, 1966.
CHAPTER V
APPLICATION OF THE ADAPTED COST-BENEFIT ANALYSIS
TO THE NATIONAL DEVELOPMENT BANK OF ECUADOR

In the preceding chapter the National Development Bank has been described as to its evolution and present status. The components used in describing the present status of the Bank are those which are normally used in the analysis or evaluation of an agricultural development bank. The purpose of the present chapter is to apply the proposed adapted cost-benefit analysis to the National Development Bank in order to demonstrate its utility as an additional means by which the overall performance of an agricultural development bank can be measured or evaluated.

Methodology for Imputing Benefits

An ideal basis for determining the benefits (as defined in this study) derived from the available loanable funds of an agricultural development bank would be from yearly farm income statistics on the borrowers of the bank. Provided that similar statistics were available for farmers not using the services of the agricultural development bank, the differential in the change in gross income between the two groups of farmers could be attributed in part to the influence of the agricultural development bank. Through knowledge of the year by year financing, it would be possible to impute to the various sources
of financing this differential of gross income proportionate to the amount of investment financed. It can be seen from the preceding statements that even with substantial data the imputation of benefits to the influence of the agricultural development bank is at best an approximation.

The National Development Bank of Ecuador, however, does not have records on the types of statistics mentioned above on their borrowers. As such, it was necessary in the research conducted to use a representative cross-sectional sample to obtain the necessary information. Included in the sample of farmers interviewed were both borrowers and non-borrowers of the National Development Bank. While in the farm questionnaire that was used there was an abundance of information obtained from the farmers who were interviewed, only the parts relevant to application of the adapted cost-benefit analysis will be utilized herein. These data are the production and income data and information with respect to the financing used by the farmers. Wherever possible these data were obtained for years 1964 and 1965.

With respect to the farmers who have loans from the National Development Bank it would be expected that within this sample of farmers there is represented a cross-section of loans in terms of:

1. purpose of loan,
2. length of loan,
3. size of loan, and
4. age of loan.
On this basis it could be expected that the productivity represented by these loans would provide a reasonable estimate of the average productivity of loans made by the National Development Bank.

It is quite clear, for farmers who were not borrowers of the National Development Bank, that their change in gross income from 1964 to 1965 was due to factors other than the influence of the National Development Bank. If their gross income figure changes are subtracted from the gross income changes of the National Development Bank borrowers, then the resulting differential should be at least in part due to the influence of the National Development Bank. To determine that part of the differential that was due to the influence of the National Development Bank it is necessary to impute a portion of this differential as "Benefits" derived from the Bank on the basis of the per cent the loan financed of the farmers total net investment. Yearly changes in income attributable to investment are a function of net investment. Therefore, it is necessary to consider only the net investment of the farmers, and not the total investment. The total investment sets the level of the income base but should not otherwise affect the rate of growth.

The above process, however, imputes to each source of finance a proportionate share based upon equal productivities. That is, even though through use of the services of the National Development Bank the farmers' total productivity may be greater, through the process of imputation described the effect is distributed evenly to all sources of financing of investment. In the case of the rural sector of
Ecuador, and many of the underdeveloped countries, due to the low level of savings of farmers the additional net investment made by the farmer in addition to that financed by the Bank loan is not great. Thus, it would not be expected that the described process of imputing the "Benefits" would seriously affect the outcome.

Setting the above discussion down more specifically can be done as follows:

Equation 1. Change in Gross Income of National Development Bank Borrowers - Change in Gross Income of Farmers not Borrowing from the National Development Bank = Change in Gross Income Due in Part to Influences of the National Development Bank.

Equation 2. Change in Gross Income Due in Part to Influences of the National Development Bank - Change in Gross Income Due to Additional Net Investment = Change in Gross Income Attributable to the Influence of the National Development Bank's Services (Adjusted Gross Income of Borrowers, Figure 1, p. 39).

In the present research it will be assumed that this "Adjusted Gross Income of Borrowers" is the result of a specific percentage of the loans received from the National Development Bank. It will be assumed that the total net investment made by the borrowers of the National Development Bank is based upon the maximum amount the National Development Bank will lend of the total project (or investment) cost. Due to the low level of savings in the rural sector of Ecuador this is
not an unrealistic assumption. The regulations of the National Development Bank allow the Division of Banking Credit to lend up to 80 per cent of the total project (or investment) cost. The remaining amount of the investment which must be financed in some other manner by the borrower is then 25 per cent of the amount of the loan received from the National Development Bank. Thus, the "Change in Gross Income of Borrowers Due in Part to the Influence of the National Development Bank" will be reduced 20 per cent to arrive at the "Adjusted Gross Income of Borrowers."

Having computed the "Adjusted Gross Income of Borrowers" for the National Development Bank borrowers included in the sample it is possible to use this figure to estimate the total "Benefits" derived from the Bank's lending operation for 1965.

**Computation of the Components of the Adapted Cost-Benefit Analysis**

Since complete farm income data are not available for the farmers who were interviewed in the coast and in the oriente (the eastern lowlands), the empirical computations, and consequently, the application of the adapted cost-benefit analysis will be restricted to the branches of the National Development Bank located in the Sierra.

Included in the farmers interviewed in the Sierra were 70 farmers who were borrowers of the National Development Bank and 319 farmers who did not borrow from the Bank. Of the 319 farmers there were 223 who did not use credit at all while the other 76 obtained credit from various types of moneylenders and institutional sources such as the
private commercial banks and insurance companies. Included among the
70 farmers who were borrowers of the National Development Bank were 30
who had:

1. received loans which came due before January, 1965, or

2. received loans after the middle of the calendar year 1965
which had due dates after the middle of calendar year 1966.

In both of these cases it did not appear justifiable to claim an in-
crease in the gross income of these borrowers due to the present in-
fluence of the National Development Bank. Therefore, of the 70 bor-
rrowers only 40 loans were selected to use as the basis for determining
the amount of influence of the Banks' agricultural credit operation on
the gross farm incomes of borrowers. The individual loans which are
included in the analysis are shown in Appendix Table 1. In Table 8
are presented the purpose, average size and length of these 40 loans.

This is a relatively small number of observations. However, care in
the selection of the individual observations should provide a basis
for justifying the analysis based upon a relatively small sample
size.
TABLE 8
Purpose, Average Length and Size of the Forty Loans Used in the Adapted Cost-Benefit Analysis of the National Development Bank

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Number of Loans</th>
<th>Per cent</th>
<th>Average Length of Loan in Months</th>
<th>Average Size of Loan in Sucres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop</td>
<td>14</td>
<td>36</td>
<td>35.4</td>
<td>17,280</td>
</tr>
<tr>
<td>Livestock</td>
<td>16</td>
<td>39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td>2</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land Improvement</td>
<td>8</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>40</td>
<td>100</td>
<td>35.4</td>
<td>17,280</td>
</tr>
</tbody>
</table>


The total 1964 and 1965 gross farm incomes of the farmers interviewed are shown in Table 9. The amount of gross income change is calculated and following the general procedure outlined in the preceding section the "Adjusted Gross Income of Borrowers" is $53,440 sucres for an average of $1,336 sucres per loan received from the Bank. The average length of these loans was approximately three years and, therefore, it is necessary to increase the figures by a factor of three in order to obtain an approximation of the total adjusted gross income generated due to these loans. The "Adjusted Gross Income
of Borrowers is thus $160,320 sucres for an average of $4008 sucres per loan. Assuming that these loans are representative of loans made by the branches of the National Development Bank located in the Sierra the "Adjusted Gross Income of Borrowers" resulting from the lending operations of the branches can be estimated on the basis of the above figures.

TABLE 9

Gross Farm Incomes of Ecuadorian Farmers
Located in the Sierra
(in sucres)

<table>
<thead>
<tr>
<th></th>
<th>1964 Gross Farm Income</th>
<th>1965 Gross Farm Income</th>
<th>Amount of Change</th>
<th>Percentage Change (1965 - 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borrowers of the National Development Bank</td>
<td>1,805,660</td>
<td>1,947,256</td>
<td>141,596</td>
<td>7.84</td>
</tr>
<tr>
<td>Non-Borrowers of the National Development Bank</td>
<td>4,205,598</td>
<td>4,379,929</td>
<td>174,340</td>
<td>4.14</td>
</tr>
<tr>
<td>Differential Between Borrowers and Non-Borrowers</td>
<td></td>
<td></td>
<td></td>
<td>3.70</td>
</tr>
</tbody>
</table>

*a 18.18 sucres = 1 U.S. dollar.

*b This category includes only those National Development Bank borrowers who had loans outstanding during 1965.

Shown in Table 10 are number and amount of loans made by the Branch Banks in the Sierra during 1965. Multiplying the average "Adjusted Gross Income of Borrowers" by the number of loans made in the Sierra during 1965 will result in an estimation of the total adjusted gross income of borrowers generated due to the branch bank operations during 1965

\[ \$4008 \times 6675 = \$26,753,000 \text{ (sucres)} \]

The "Average Available Loanable Funds" for the branches of the National Development Bank are shown in Table 11 under the heading of Productive Assets. Included in this figure are the cash, loans, and investments of the Bank. The required reserves, bank real estate and equipment were not included. Since the interest is only with the "Average Available Loanable Funds" for the Sierra region it was necessary to allocate the productive assets of the main office of the National Development Bank to each of the branches in the system. Within the main office headquarters located in Quito there is also maintained a Quito branch operation. The assets of this branch are not recorded separately on the books of the National Development Bank. The Quito branch was, therefore, allocated 1/35 of the productive assets, with the rest being evenly divided between the Sierra branches, of which there are sixteen, and the branches in the coast and oriente, of which there are nineteen. The "Average Available Loanable Funds" are thus $638,598,847 sucres for the National Development Banks' branches located in the Sierra.
<table>
<thead>
<tr>
<th>Branch</th>
<th>Number of Loans</th>
<th>Total Value (in thousand of sucres)</th>
<th>Average Value (in sucres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tulcan</td>
<td>514</td>
<td>9,896</td>
<td>19,300</td>
</tr>
<tr>
<td>San Gabriel</td>
<td>157</td>
<td>1,796</td>
<td>11,440</td>
</tr>
<tr>
<td>Ibarra</td>
<td>539</td>
<td>4,566</td>
<td>8,471</td>
</tr>
<tr>
<td>Otavalo</td>
<td>326</td>
<td>2,858</td>
<td>8,769</td>
</tr>
<tr>
<td>Quito</td>
<td>418</td>
<td>23,493</td>
<td>56,203</td>
</tr>
<tr>
<td>Cayambe</td>
<td>190</td>
<td>1,749</td>
<td>9,205</td>
</tr>
<tr>
<td>Latacunga</td>
<td>307</td>
<td>8,284</td>
<td>26,984</td>
</tr>
<tr>
<td>Ambato</td>
<td>393</td>
<td>5,562</td>
<td>14,153</td>
</tr>
<tr>
<td>Riobamba</td>
<td>725</td>
<td>10,235</td>
<td>14,117</td>
</tr>
<tr>
<td>Aliausi</td>
<td>556</td>
<td>4,625</td>
<td>8,318</td>
</tr>
<tr>
<td>Guaranda</td>
<td>943</td>
<td>9,432</td>
<td>10,000</td>
</tr>
<tr>
<td>Azogues</td>
<td>759</td>
<td>4,880</td>
<td>6,430</td>
</tr>
<tr>
<td>Canar</td>
<td>264</td>
<td>2,007</td>
<td>7,602</td>
</tr>
<tr>
<td>Cuenca</td>
<td>280</td>
<td>3,216</td>
<td>11,486</td>
</tr>
<tr>
<td>Loja</td>
<td>255</td>
<td>6,206</td>
<td>24,337</td>
</tr>
<tr>
<td>Ceriamanga</td>
<td>49</td>
<td>687</td>
<td>14,020</td>
</tr>
<tr>
<td>TOTAL</td>
<td>6675</td>
<td>99,492</td>
<td>14,900</td>
</tr>
</tbody>
</table>

*18.18 sucres = 1 U.S. dollar.

bThe Quito branch makes all loans over $100,000 for other branch banks.

Source: Data obtained from the National Development Bank.
**TABLE 11**

Selected Data for Sierra Branches of the National Development Bank of Ecuador, As of December 31, 1965 and for the Year 1965 (in sucres)\(^a\)

<table>
<thead>
<tr>
<th>Branch</th>
<th>Productive Assets(^b)</th>
<th>Total Expenses</th>
<th>Personnel Expenses</th>
<th>Interest Expense</th>
<th>Other General Expenses</th>
<th>Amortization and Other Expense</th>
<th>Total Expense as a Per cent of Productive Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tulcan</td>
<td>14796179</td>
<td>1194960</td>
<td>816948</td>
<td>93920</td>
<td>241242</td>
<td>42850</td>
<td>8.08</td>
</tr>
<tr>
<td>San Gabriel</td>
<td>2293231</td>
<td>179191</td>
<td>117124</td>
<td>659</td>
<td>59888</td>
<td>1520</td>
<td>7.81</td>
</tr>
<tr>
<td>Ibarra</td>
<td>12537349</td>
<td>1149609</td>
<td>835439</td>
<td>70401</td>
<td>212325</td>
<td>31443</td>
<td>9.20</td>
</tr>
<tr>
<td>Otavalo</td>
<td>5215223</td>
<td>523687</td>
<td>382339</td>
<td>4416</td>
<td>127388</td>
<td>9545</td>
<td>10.04</td>
</tr>
<tr>
<td>Quito(^c)</td>
<td>13150774</td>
<td>835849</td>
<td>272453</td>
<td>394285</td>
<td>90286</td>
<td>78827</td>
<td>6.36</td>
</tr>
<tr>
<td>Cayambe</td>
<td>4835552</td>
<td>306558</td>
<td>208888</td>
<td>6562</td>
<td>87163</td>
<td>3946</td>
<td>6.34</td>
</tr>
<tr>
<td>Latacunga</td>
<td>27372008</td>
<td>1205588</td>
<td>831080</td>
<td>122964</td>
<td>227318</td>
<td>24226</td>
<td>4.40</td>
</tr>
<tr>
<td>Ambato</td>
<td>12464849</td>
<td>1218397</td>
<td>904588</td>
<td>24935</td>
<td>250412</td>
<td>38462</td>
<td>9.77</td>
</tr>
<tr>
<td>Riobamba</td>
<td>33823900</td>
<td>2170479</td>
<td>1224046</td>
<td>253729</td>
<td>304887</td>
<td>387848</td>
<td>6.42</td>
</tr>
<tr>
<td>Alansi</td>
<td>7251954</td>
<td>624601</td>
<td>446922</td>
<td>4429</td>
<td>162836</td>
<td>10414</td>
<td>8.61</td>
</tr>
<tr>
<td>Guaranda</td>
<td>13357780</td>
<td>1444983</td>
<td>915004</td>
<td>139790</td>
<td>291620</td>
<td>98567</td>
<td>10.82</td>
</tr>
<tr>
<td>Azogues</td>
<td>10282909</td>
<td>1144569</td>
<td>759727</td>
<td>123230</td>
<td>201724</td>
<td>59888</td>
<td>11.13</td>
</tr>
<tr>
<td>Canar</td>
<td>4420161</td>
<td>375311</td>
<td>239500</td>
<td>59553</td>
<td>62869</td>
<td>13388</td>
<td>8.49</td>
</tr>
<tr>
<td>Cuenca</td>
<td>14235044</td>
<td>1429810</td>
<td>981196</td>
<td>194234</td>
<td>210987</td>
<td>43992</td>
<td>10.04</td>
</tr>
<tr>
<td>Loja</td>
<td>1373184</td>
<td>1198121</td>
<td>808488</td>
<td>130669</td>
<td>212829</td>
<td>46134</td>
<td>8.73</td>
</tr>
<tr>
<td>Cariamanga</td>
<td>1703757</td>
<td>168777</td>
<td>107386</td>
<td>1247</td>
<td>57479</td>
<td>2666</td>
<td>9.91</td>
</tr>
<tr>
<td>SUB TOTAL</td>
<td>191472511</td>
<td>15470490</td>
<td>9851098</td>
<td>1625023</td>
<td>2801251</td>
<td>893116</td>
<td>8.08</td>
</tr>
</tbody>
</table>

Sierra's Share of the Main Office's Productive Assets\(^d\)

<table>
<thead>
<tr>
<th></th>
<th>647126336</th>
<th>14290603</th>
<th>4631693</th>
<th>6702838</th>
<th>1534820</th>
<th>1340052</th>
<th>3.18</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>638598847</td>
<td>29379893</td>
<td>14482791</td>
<td>8327861</td>
<td>4336071</td>
<td>2233168</td>
<td>4.50</td>
</tr>
</tbody>
</table>

\(^a\) 18 sucres = 1 U.S. dollar. \(^b\) Productive assets include cash, loans and investments, but exclude required reserve, bank real estate and equipment. \(^c\) The productive assets and expenses for Quito branch were obtained by dividing the Quito main office figures by 35 and allotting 1/35 to the Quito branch. \(^d\) The branches in the Sierra were allotted one-half of the main office's productive assets and expenses after reducing them by 1/35.

Source: Data obtained from the National Development Bank.
The same procedures of allocation was utilized with respect to the costs of operation of the branches of the National Development Bank in the Sierra. Also presented in Table 11 are the 1965 expenses of the branches of the National Development Bank located in the Sierra. It was not possible to obtain the costs in any other breakdown than those shown in the table.

Included in the 1965 bank costs are the costs due to loans outstanding made prior to 1965 and costs due to loans extended in 1965. Assuming that the average term of loan made in the two years preceding 1965 is similar to the term of loans that will be made in 1965 and the next two years, the costs incurred during the year 1965 can be thought of as approximately equal to the amount of costs that will be incurred over the life of the loans made in 1965. The total bank costs for 1965 can then be related to the benefits that are expected to result from the loans extended during 1965.

To the expenses shown in Table 11, however, must be added the cost due to non-repayment of loan principal. The 2.65 per cent loss rate of loans made during the 1948-1965 period will be used as a basis for an estimated loss rate in the present analysis.¹ The total bank costs associated with loans made during 1965 are thus:

\[ \$29,379,893 + \$2,636,538 = \$32,016,431 \text{ (sucres).} \]

¹Due to improved credit granting and collection practices during recent years it is very possible a lower rate is justifiable.
Utilization and Interpretation of the Adapted Cost-Benefit Analysis

Presented on the following page, Figure 2, are the components of the adapted benefit-cost analysis as applied to the 1965 operations of the Sierra branches of the National Development Bank. The 5.01 percentage ratio of bank costs to average available loanable funds is of interest in that it appears to be very low. However, it must be remembered that the volume of loans made in relation to the bank's productive assets is quite small, approximately 15.57 per cent. The loans outstanding in relation to the branch banks' productive assets are only 45.36 per cent. When the bank costs are related to loans made during 1965 or to loans outstanding as of December 31, 1965 the resulting cost ratios are 31.53 per cent and 10.83 per cent respectively.

On the benefit segment of the figure the percentage ratio of adjusted gross income to average available loanable funds is 4.18. This ratio can be interpreted as follows: for every sucre of available loanable funds the Bank generates four hundredths sucre of increased gross farm income. This could be possibly explained at least in part via the same reasons used above. The percentage of loans made is small in proportion to average available loanable funds. Other reasons may include considerations such as the possibility that the loans made are not productive or the loans made are replacing other sources of finance with no great increase in actual net investment taking place. This latter observation is based upon the fact that the $160,320 sucre of adjusted gross income of borrowers included in the sample was generated
FIGURE 2

Total Bank Cost as a Per cent of Available Loanable Bank Funds 5.01

DIVIDED BY

Total Bank Cost 32,016,431

DIVIDED BY

Average Available Loanable Bank Funds 638,598,847

Overhead Costs Over Life of Loans 2,233,168

Personnel Expenses Over Life of Loans 14,482,791

Interest Expense Over Life of Loans 8,327,861

Other General Expenses Over Life of Loans 4,336,071

Cost Due to Loss of Principal As a Result of Non-Repayment of Loans 2,636,538

Change in Gross Income of Borrowers Over Life of Loans Less the Change in Gross Income of Non-Borrowers 33,441,750

MINUS

Change in Gross Income of Borrowers Over Life of Loans Resulting from Finances Secured from Sources Other Than the National Development Bank 6,688,350

Adjusted Gross Income of Borrowers as a Per cent of Available Loanable Bank Funds 4.18

DIVIDED BY

Adjusted Gross Income of Borrowers 26,753,400

MINUS

Change in Gross Income of Borrowers Over Life of Loans Resulting from Finances Secured from Sources Other Than the National Development Bank 6,688,350

Total Bank Cost per Unit of Adjusted Gross Income of Borrowers 1.20

DIVIDED BY

Overhead Costs Over Life of Loans 2,233,168

Personnel Expenses Over Life of Loans 14,482,791

Interest Expense Over Life of Loans 8,327,861

Other General Expenses Over Life of Loans 4,336,071

Cost Due to Loss of Principal As a Result of Non-Repayment of Loans 2,636,538

Change in Gross Income of Borrowers Over Life of Loans Less the Change in Gross Income of Non-Borrowers 33,441,750

MINUS

Change in Gross Income of Borrowers Over Life of Loans Resulting from Finances Secured from Sources Other Than the National Development Bank 6,688,350

100
through loan proceeds of an amount of $691,000 sucres. Thus, the increase in adjusted gross income (or economic growth as defined in this study) was 23.19 per cent of the amount of the loans received by these borrowers.

It must be remembered, however, that this analysis says nothing about the productivity of the Bank loans from the individual farmer's point of view. For, if the farmer had used an equivalent amount of financing the previous year, all other things held constant, an increase in gross income would not have resulted in 1965. Thus, even though the Bank loan was productive for the farmer, no economic growth would be measured because the loan proceeds did not create added gross income. The National Development Bank, however, is being analyzed here with respect to its abilities to stimulate economic growth. As such the measurement of growth stimulation must be in terms of increased gross farm income resulting from its average available loanable funds.

**Projection Based Upon Additional Loanable Funds Being Provided to the National Development Bank**

The loans made by the National Development Bank with its available loanable funds should, however, be thought of as a revolving fund which can be loaned out period after period if the costs incurred in this lending process are deducted each period. As such the amount of economic growth generated over a period of time as a result of National Development Bank's lending process can be calculated.
On the following page is presented (Table 12) the amount of increased gross farm income that would be expected to occur over a ten-year period with $1,000,000 of additional loanable funds. The calculations are based upon the previous analysis and as such it must be kept in mind that only the branches of the National Development Bank located in the Sierra are being considered and not the entire system. The projection is based upon the following assumptions:

1. $1,000,000 of loanable funds are provided the branches of the National Development Bank located in the Sierra.

2. The period of time over which the amount of increased gross farm income generated will be computed is ten years.

3. The Branch Banks will loan 80 per cent of the cost of the investment.

4. The economies of scale of the Branch Banks will not be affected by the additional $1,000,000.

5. All costs incurred by the Branch Banks in using this $1,000,000 will be subtracted from the million dollars. These costs are evenly distributed throughout the year and thus the equivalent of one-half of the yearly expenses can be utilized during the year.

6. The productivity of the investments made by the borrowers of the Branch Banks is constant.

7. The social time preference as measured through a rate of discount is 10 per cent. This is an arbitrarily chosen rate with its only justification being the fact that it lies between the rates of interest charged by the commercial banks and the National Development Bank.
TABLE 12

Increase in Agricultural Output as Measured by Gross Farm Sales Resulting from the Injection of $1,000,000 of Development Fund Into the Sierra Branches of the National Development Bank of Ecuador (in dollars)

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Available Loanable Fundsa</th>
<th>Average Available Loanable Funds</th>
<th>Adjusted Gross Income of Borrowers</th>
<th>Discount Factor (10%)</th>
<th>Present Value of Adjusted Gross Income of Borrowers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>974,950</td>
<td>974,950</td>
<td>40,753</td>
<td>.9091</td>
<td>37,049</td>
</tr>
<tr>
<td>2</td>
<td>926,105</td>
<td>926,105</td>
<td>38,711</td>
<td>.8264</td>
<td>31,991</td>
</tr>
<tr>
<td>3</td>
<td>879,707</td>
<td>879,707</td>
<td>36,772</td>
<td>.7513</td>
<td>27,627</td>
</tr>
<tr>
<td>4</td>
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<td>835,634</td>
<td>34,930</td>
<td>.6830</td>
<td>23,857</td>
</tr>
<tr>
<td>5</td>
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<td>793,769</td>
<td>33,180</td>
<td>.6209</td>
<td>20,601</td>
</tr>
<tr>
<td>6</td>
<td>754,001</td>
<td>754,001</td>
<td>31,517</td>
<td>.5645</td>
<td>17,791</td>
</tr>
<tr>
<td>7</td>
<td>716,226</td>
<td>716,226</td>
<td>29,938</td>
<td>.5132</td>
<td>15,364</td>
</tr>
<tr>
<td>8</td>
<td>680,344</td>
<td>680,344</td>
<td>28,438</td>
<td>.4665</td>
<td>13,266</td>
</tr>
<tr>
<td>9</td>
<td>646,259</td>
<td>646,259</td>
<td>27,014</td>
<td>.4241</td>
<td>11,457</td>
</tr>
<tr>
<td>10</td>
<td>613,881</td>
<td>613,881</td>
<td>25,660</td>
<td>.3855</td>
<td>9,892</td>
</tr>
</tbody>
</table>

TOTAL | 326,913                           | 208,895                           |

a All costs incurred by the Branch Bank in using this $1,000,000 will be subtracted from the million dollars. It is assumed that these costs are evenly distributed throughout the year and consequently one-half of the yearly expense can be loaned out during the year.

Source: Calculated from the cost-benefit components indicated in Figure 2.
As shown in Table 12 the total increase in gross farm income generated as a result of the use of an additional $1,000,000 by the Branch Banks over a ten-year period is $326,913. Over the ten-year period, however, the Branch Banks expended only $401,892 of the original $1,000,000. Based on these figures the total bank cost to adjusted gross farm income ratio is 1.23. The total increased gross farm income that could be expected to be generated if there were no time restriction would be $813,008. It must be noted that the above figures are not in terms of present value. When this is done the $326,913 figure is reduced to $208,895. The $813,008 figure would be reduced even more due to the greatly extended time period and consequently smaller present value.

The foregoing results were to be expected in that on Figure 2 the calculated ratio of bank cost to adjusted gross income of borrowers was in excess of one. Given a cost-benefit ratio greater than one the expending of funds will never be equaled by the benefits derived. The same is true for the adapted cost-benefit analysis as applied to agricultural development banks. If the ratio of bank cost to adjusted gross income of borrowers is greater than one, the increased gross farm income generated through the Bank loans will be less than the funds expended in the loan-making process.

---

This figure is obtained by subtracting $15,773 (one-half of the tenth year expenses) from $613,881.
Assuming that the calculations are correct and that both the benefits and the costs were correctly measured, the interpretation of the results of the application of the adapted cost-benefit analysis to the branches of the National Development Bank located in the Sierra is that the development function is not being effectively carried out by these branches. It must be remembered, however, that the present analysis does not cover the overall agricultural credit operations of the National Development Bank in the coast and oriente and as such it is not possible to generalize as to the effectiveness of the National Development Bank in stimulating economic growth of the agricultural sector.

Concluding Observations with Respect to the Application of the Adapted Cost-Benefit Analysis to the National Development Bank

The main concern of this thesis has not been to evaluate the National Development Bank of Ecuador per se, but rather to develop a model designed to more definitely measure the performance of the development function for which agricultural development banks are responsible. To demonstrate that the model developed does provide evaluative information not obtained through the traditional profit-oriented firm analysis approach required application of the model to a real situation.

The National Development Bank of Ecuador provided an appropriate vehicle for this demonstration. The Bank had recently been evaluated by two independent groups. Both of these groups approached the
evaluation from the standpoint of determining the financial soundness and profitability of the Bank as an indication of its performance as a development bank. Both evaluations showed the financial soundness of the Bank and its progress toward the point of profitable operation to be sufficient to conclude that the National Development Bank was worthy as an institution through which to channel development funds.

Thus, the National Development Bank appeared to provide an appropriate device for demonstrating the utility of the adapted cost-benefit model proposed in this study. A validation of the utility of the model would be supported if the model as applied to the National Development Bank provided relevant and valuable information which would augment the evaluative information presented by the standard profit oriented firm analysis approach as used by the other two studies. It is concluded that based upon the application of the model and the resultant information provided by the model that it does have utility in evaluating the overall performance of agricultural development banks.

The limitations of the analysis reported herein must be emphasized in the interest of objectivity and equitability in the consideration of the National Development Bank of Ecuador.

The adapted cost-benefit model was first constructed so that it would be theoretically correct as an evaluative device. The model was then applied to an actual situation where the exact types of data specified as components in the theoretical model were not available.
Consequently, the necessary step was to make certain assumptions with respect to the available data so that the analysis could be carried out.

It was not the intent to make assumptions that were so unrealistic as to invalidate the results but neither was it intended for the results to be used directly as the basis for decisions that might be made in connection with the Bank.
CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

The objective set forth in this thesis was to develop a model (or a method of analysis) which would be of value in more definitively measuring the performance of agricultural development banks. The assertion was made that agricultural development banks have customarily been evaluated through use of the traditional profit-oriented firm analysis. As such, it has been necessary to make inferences about the banks' performance of their development functions from their financial soundness and profitability situations. A further assertion was made that a more direct measure of the banks' performance in stimulating economic development is required because:

1. the assumptions required for effective competition to simultaneously provide the discipline for the maximization of the welfare of society and for (maximization) of the profits of the bank are absent;

2. the typical development banks' stated objectives include promoting economic development, hence a direct measure of achievement is essential;

3. some agricultural development banks are not inclined to accept the profit motive, hence efficiency must be measured directly.
The method proposed for directly measuring the performance of agricultural development banks was an adaptation of the cost-benefit analysis. The costs and benefits appropriate for use in such an approach to the analysis of agricultural development banks were first defined. A theoretical model was constructed to illustrate how the costs and benefits would be related and utilized for evaluation of an agricultural development bank.

It was then necessary to demonstrate that the evaluative technique developed augmented and significantly enhanced definitive evaluations of agricultural development banks. To do this the National Development Bank of Ecuador appeared appropriate from both a situation and data availability point of view. From the situation aspect the Bank served as an ideal subject because of the fact that just recently two independent evaluative studies had been made of the bank. Both studies developed the bases for their conclusions from the traditional profit-oriented firm analysis approach. It was possible, therefore, using the approach developed in this thesis to validate its usefulness as an evaluative technique by demonstrating that its application to the operations of the National Development Bank produced significant evaluative information about the Bank not brought out by the other studies. It was concluded upon application of the adapted cost-benefit analysis approach to the National Bank that the resulting evaluative information significantly augmented the findings of the previous studies.
The exact results produced by the adapted cost-benefit analysis as applied to the National Development Bank were not the ultimate purpose of the demonstration. Rather, it was intended for the National Development Bank to serve as a vehicle for demonstrating the utility of the approach and its potential as a generalizable technique for augmenting future agricultural development bank evaluations. While the National Bank of Ecuador provided an ideal situation for application of the model as a demonstration of its utility, the Bank of Ecuador is by no means unique among the underdeveloped countries. Therefore, the adapted cost-benefit model developed in this study should be of value in augmenting evaluations made of other agricultural development banks.

**Conclusions**

Based upon the results of the application of the adapted cost-benefit model to the Sierra branches of the National Development Bank, it is concluded that the model has utility as a technique in evaluating the performance of agricultural development banks. The results of the application of the cost-benefit analysis showed that the traditional profit-oriented firm analysis may not provide a complete picture of the performance of agricultural development banks. Inferences made about agricultural development banks' performance of their development function based upon their profitability and financial soundness may be misleading.
The level of performance of the National Development Bank as indicated by the adapted cost-benefit evaluation also provides a preliminary basis for the tentative hypothesis that agricultural development banks may not be satisfactorily accomplishing the objectives for which they are established. This would suggest that further studies be conducted to determine whether there is support for this hypothesis on a more general basis.

The carrying out of the adapted cost-benefit method of evaluation requires that certain assumptions be made. Depending upon the particular situation, special studies would have to be made to obtain the information necessary to use this approach.

The process of applying the adapted cost-benefit model to a real situation pointed out the very crucial nature of adequate farm income data of borrowers for the accurate measurement of economic growth. This suggests the importance of periodic income records being kept of at least a sample of the borrowers of agricultural development banks if the adapted cost-benefit analysis is to be used in the future to augment evaluations made of other agricultural development banks.
APPENDIX
<table>
<thead>
<tr>
<th>ASESORIA</th>
<th>DELEGACIÓN</th>
<th>BANCO NACIONAL DE COMERCIOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presidente</td>
<td>155,776.27</td>
<td>1,087,294.23</td>
</tr>
<tr>
<td>Gerente</td>
<td>82,000.00</td>
<td>2,781,000.00</td>
</tr>
<tr>
<td>Secretario</td>
<td>60,000.00</td>
<td>1,800,000.00</td>
</tr>
<tr>
<td>Administrativo</td>
<td>40,000.00</td>
<td>1,200,000.00</td>
</tr>
<tr>
<td>Contador</td>
<td>30,000.00</td>
<td>900,000.00</td>
</tr>
<tr>
<td>Asesor</td>
<td>20,000.00</td>
<td>600,000.00</td>
</tr>
<tr>
<td>Asesor</td>
<td>15,000.00</td>
<td>450,000.00</td>
</tr>
<tr>
<td>Asesor</td>
<td>10,000.00</td>
<td>300,000.00</td>
</tr>
<tr>
<td>Asesor</td>
<td>5,000.00</td>
<td>150,000.00</td>
</tr>
<tr>
<td>Total</td>
<td>3,296,975.27</td>
<td>9,882,252.75</td>
</tr>
</tbody>
</table>

Notas: Datos extraídos del boletín del BNC.
<table>
<thead>
<tr>
<th>Ámbito</th>
<th>Actividad Descripción</th>
<th>Cantidades Presupuestadas</th>
<th>Cantidades Estimadas</th>
<th>Cantidades Destinadas</th>
<th>Cantidades Imp.</th>
<th>Cantidades Recuperadas</th>
<th>Cantidades Realizadas</th>
<th>Cantidades Inv.</th>
<th>Total Ingresos</th>
<th>Total Inversiones</th>
<th>Total Variación</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>S[table:1]</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### APPENDIX TABLE 1

#### BASES FISCALES DE POLICIA

**Albacete (ALBA) - Cuenca (CUENCA) - Guadalajara (GUA)**

**December 31, 19**

<table>
<thead>
<tr>
<th>GROUP</th>
<th>TOTAL</th>
<th>ASSETS</th>
<th>LIABILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td>3,671,969.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Current</strong></td>
<td>3,671,969.00</td>
<td>1,085,487.00</td>
<td>716,482.00</td>
</tr>
<tr>
<td><strong>Trade Debts</strong></td>
<td>1,085,487.00</td>
<td>92,046.00</td>
<td></td>
</tr>
<tr>
<td><strong>Cash</strong></td>
<td>1,085,487.00</td>
<td>1,074,820.00</td>
<td>2,280.00</td>
</tr>
<tr>
<td><strong>Trade Receivables</strong></td>
<td>1,085,487.00</td>
<td>2,482.00</td>
<td></td>
</tr>
<tr>
<td><strong>Prepaid Expenses</strong></td>
<td>1,085,487.00</td>
<td>1,085,487.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Investments</strong></td>
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<td>1,085,487.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Other Current Assets</strong></td>
<td>1,085,487.00</td>
<td>1,085,487.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Total Current Assets</strong></td>
<td>3,671,969.00</td>
<td>3,671,969.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Non-current</strong></td>
<td>3,671,969.00</td>
<td>2,998,481.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Investment in Shares</strong></td>
<td>3,671,969.00</td>
<td>3,671,969.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Long-term Loans</strong></td>
<td>3,671,969.00</td>
<td>3,671,969.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Total Non-current</strong></td>
<td>3,671,969.00</td>
<td>3,671,969.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td>3,671,969.00</td>
<td>3,671,969.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Liabilities</strong></td>
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<td>3,671,969.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Total Liabilities</strong></td>
<td>3,671,969.00</td>
<td>3,671,969.00</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3,671,969.00</td>
<td>3,671,969.00</td>
<td>0.00</td>
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</tbody>
</table>

*Note: Data from the Ministry of the Interior.*

(1) According to tables of the MFI, are updated and may correspond to slightly different years.*
<table>
<thead>
<tr>
<th><strong>ANOTACIÓN</strong></th>
<th><strong>CANTIDAD</strong></th>
<th><strong>ESTIMADO</strong></th>
<th><strong>SALDO</strong></th>
<th><strong>DIFERENCIA</strong></th>
<th><strong>OTROS</strong></th>
<th><strong>TOTAL</strong></th>
<th><strong>FIN ALES</strong></th>
<th><strong>INTEGRACIÓN</strong></th>
<th><strong>ANIMACIÓN</strong></th>
<th><strong>ESPAÑA</strong></th>
<th><strong>TOTAL</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inmuebles</strong></td>
<td>1,000,000.00</td>
<td>1,000,000.00</td>
<td>1,000,000.00</td>
<td>1,000,000.00</td>
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<td>1,000,000.00</td>
<td>1,000,000.00</td>
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<tr>
<td><strong>Inmuebles</strong></td>
<td>2,000,000.00</td>
<td>2,000,000.00</td>
<td>2,000,000.00</td>
<td>2,000,000.00</td>
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<td>2,000,000.00</td>
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<tr>
<td><strong>Inmuebles</strong></td>
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<td>3,000,000.00</td>
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<td>3,000,000.00</td>
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<td>3,000,000.00</td>
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<tr>
<td><strong>Inmuebles</strong></td>
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<td><strong>Inmuebles</strong></td>
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<td>5,000,000.00</td>
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<td>5,000,000.00</td>
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</table>

**Note:** Data taken from bank's records.
**APPENDIX TABLE 2**

Individual Loan Characteristics of the Forty Loans Used in the Adapted Cost-Benefit Analysis of the National Development Bank

<table>
<thead>
<tr>
<th>Number</th>
<th>Received Mo. Year</th>
<th>Date Due Mo. Year</th>
<th>Term (mo.)</th>
<th>Amount of Loan Received (sucre)</th>
<th>Amount of Loan Outstanding (sucre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>9968</td>
<td>60</td>
<td>50,000</td>
<td>50,000</td>
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<td>2</td>
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<td>3</td>
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<td>4</td>
<td>1063</td>
<td>1066</td>
<td>36</td>
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<td>24,000</td>
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<td>5</td>
<td>0555</td>
<td>0566</td>
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<td>10,000</td>
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<td>6</td>
<td>0665</td>
<td>0667</td>
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<td>15,000</td>
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<td>0665</td>
<td>0666</td>
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<td>8</td>
<td>0665</td>
<td>0666</td>
<td>12</td>
<td>1,000</td>
<td>1,000</td>
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<td>0366</td>
<td>24</td>
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<td>6,400</td>
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<td>10,000</td>
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<td>1165</td>
<td>24</td>
<td>7,000</td>
<td>4,000</td>
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<td>13</td>
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<td>6,000</td>
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</tr>
<tr>
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<td>36</td>
<td>12,000</td>
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</tr>
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**Total 40** | **1418** | **691,200** | **387,600**

**Mean** | **35.4** | **$17,280** | **$9,590**

*No. .99 means no information.*

Source: OSU Agricultural Finance Center, Farmer Survey.
BIBLIOGRAPHY


