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Report to Rural Development Division
USAID/Peru
on
AGRICULTURAL CREDIT SITUATION AND
DELINQUENCY LEVEL IN PERU, 1966.

August, 1967

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between

The United States Agency for International Development

and

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Columbus, Ohio

FOREWORD .

This paper is a partial report of The Ohio State University Agricultural Finance Center Peruvian Team's study conducted in Peru during 1966 under contract AID/csd-463.

The authors wish to extend their appreciation to Messes. George Bowers, Rural Development Officer, and Ernest Gutierrez, Assistant Rural Development Officer and Credit Advisor, US/AID Peru; to Eng. Juan Fernandez Stoll, Director of the Office of Planning of the Banco de Fomento Agropecuario del Peru, and his staff for their cooperation and aid in conducting the study; and to the branch managers of the BFP who gave us invaluable aid in conducting the actual survey.

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CHAPTER I
INTRODUCTION

Agricultural credit is one of the tools being employed in the present efforts to implement economic development in many of the less developed countries of the world. The use of agricultural credit in many areas has been and is being plagued by the problem of delinquency of repayment and default of loans. This thesis will focus on this problem and will attempt to discover and explain some of the underlying reasons which contribute to or aggravate the problem. Because agricultural credit is one part of a larger program directed toward achieving overall economic development, a brief historical sketch of economic development will be given first to establish the setting of agricultural credit within the larger program.

Historical Development

Concern in the United States about international economic development came to the forefront with the close of World War II and was first expressed in the Marshall Plan For Europe and in the reconstruction of Japan. This was a period of reconstruction rather than a period of total economic development, since most of the countries which were affected had had viable and fairly diversified economies prior to World War II. They also had strong infrastructural foundations upon which to build or reconstruct their respective economies. While some

technical assistance was given, the basic problem was to resupply these economies with the necessary productive capital or means to purchase such capital. To this end, money capital in the form of credit became a very important means to re-establish the viability and productivity of these economies.

During the decade following the close of World War II, and concurrent with the above mentioned reconstruction efforts, there was a rise of newly independent nations in Asia and Africa. These newly independent states, along with the nations of Latin America, became aware of the economic disparity between themselves and the more developed nations of Western Europe and North America. These nations have also experienced a rise of nationalism which coupled with the awareness of economic disparity, has resulted in demands for economic development.

The development of international organizations such as the United Nations has given these nations the ability to voice their desires, while the fact of the "Cold War" between the East and West, primarily the U.S. A. and the U.S.S.R., has assured these countries of receptive ears and immediate action in regard to their felt needs. As a result, attempts to facilitate economic development in these latter nations which are variously defined as underdeveloped, less developed or developing quickly followed the reconstruction work in Europe and Japan.

This new tack was taken at a time of immense pressures for action, and little time for objective analysis of the problems was afforded to the parties initiating the development plans or actions. The reconstruction of Europe and Japan was just being achieved, so a similar

operation was expected to be successful in the less developed nations.

However, there would appear to be a very basic difference which is pointed out by the name of one of the international agencies organized at that time, The International Bank for Reconstruction and Development. The early efforts in Europe and Japan were of a reconstruction nature. Many of vital links of economic viability were in existence, which merely needed strengthening to re-establish the viability of the economic chain. However, the less developed nations demand a more complete development, that is, many of the vital links of the economic chain are completely nonexistent and, therefore, have to be developed rather than strengthened or reconstructed. Beyond this, the efforts in Europe particularly were complemented by the similarities of the cultures of the two parties in the reconstruction plan. In both Europe and Japan there existed a substantial contingent of national technicians who were capable of assisting in planning and of using any tools of development offered. These situations are not so true in most of the less developed nations of the world and in almost every case there is a lack of trained personnel to work in economic development.

Another pointed difference between the reconstruction countries and the total development countries is that most of the former are industrial or at least have a substantial industrial base while the latter countries are agricultural or producers of primary products with little or no industrial base. It has been noted that in the less

industrial areas of Europe the reconstruction efforts have been less successful than in the more industrial areas of Europe. Examples of this are Greece and Southern Italy.¹

Despite these fairly evident differences, the pressures of the times demanded action, and in many cases the action was the transplanting of existing institutions or plans of action from the developed countries or from the reconstruction work in Europe or Japan into the developing countries. Currie and Moseman point out that the action taken in the economic development of less developed countries at that time was piece meal, lacking clear objectives, co-ordination, necessary background research, and had insufficient adaptive research so that the haste only resulted in waste.² While the planners no doubt had implicit awareness of the differences and of the possible resulting problems, little explicit action in this regard is noted at the early stages of development attempts.

As development efforts were expanded from the reconstruction phase to the development phase, the focus also changed from industrial to agricultural. This was necessitated by the fact that the less developed nations are more dependent upon agriculture, and because a strong productive agricultural base is seen to be a prerequisite to total economic development. This change in focus has been taken to

¹Kitzinger, U. W., The Politics and Economics of European Integration, New York, Frederick A. Praeger, 1966, p. 136.

²Currie, Lauchlin, Accelerating Development, The Necessity and the Means, New York: McGraw Hill Book Company, 1966, p. 8, and A. H. Moseman, "Research Development of Agriculture," Economic Development of Agriculture, Ed. by E. O. Heady (Iowa State University Press, Ames, Iowa), 1965.

task by some workers in the development field, however, it is not the purpose of this thesis to make normative judgments in regard to the focus of the developers, but rather to consider a problem in regard to the focus of the developers, but rather to consider a problem which has arisen.

In approaching the problem of development in the less developed areas, the agricultural sector is found to be of a traditional nature. That is, it is labor intensive to the point of underemployment of labor and the use of primitive or near primitive techniques prevail. When this traditional agriculture is contrasted with the more progressive and productive agricultures of the developed nations a disparity between them in capital usage and technology is noted. This along with the classical theory that an increase in production can be achieved in a labor intensive sector through the increase of capital has caused the efforts for "transforming traditional agriculture"³ to take two basic roads: the first is to improve technology; the second is to increase capital of the agricultural sector.

Agricultural credit would appear to be the natural means to finance the desired increase of capital resources. However, the implementation of agricultural credit institutions has followed much the same pattern as did the total programs of development. That is, pre-existing institutions were put into new environmental settings as stop gap measures. As Currie points out, there is little hope for such institutions to achieve their desired ends since in most

³The phrase, "transforming traditional agriculture" is borrowed from the book of that title by T. W. Schultz, Yale University Press, New Haven, 1964.

cases the peculiar problems of the new environment are quite different from those of the institution's original environment.⁴

From an after-the-fact point of reference it is now possible to see that many of these transplanted institutions have not achieved their goals and that in many cases the institutions have fallen victim to the very problems they were to solve. It is also becoming evident that the agricultural credit systems may be creating new problems through misuse due to misconception and to misunderstandings of credit and credit usage, of the credit institution, and of the roles of credit and of the institution in the total development plan. As a result, high levels of delinquency and default have plagued many agricultural lending institutions in developing countries.

The Problem

Delinquency of agricultural credit is the focal point of this thesis, and it is considered to be a problem which dampens any of the positive developmental achievements that agricultural credit might realize.

The effects of delinquency are multiple and in almost all cases, negative. The foremost effect is that delinquency cuts down the amount of resources available for credit usage. This drain not only affects the credit fund, but may also drain resources from other areas of the economy if attempts are made to maintain a given fund level for credit. Delinquency also dampens the effect of resources since any additional

⁴Laughlin, Currie, op. cit., p. 5.

credit funds must be partly used as replacement funds instead of totally as supplemental funds. Delinquency may also propagate adverse psychological attitudes toward credit usage, the lending institution and repayment. As delinquency increases, borrowers begin to view credit as gifts or subsidies, and the institution only as a granter of these subsidies, therefore, repayment is often considered unnecessary.

Agricultural credit delinquency levels are high in many less developed countries. A few examples of these delinquency levels are given here. Peru presently has between 15 and 30 percent delinquency; Nigeria has upward to 90 percent delinquency in some areas; and Ecuador has had between 30 and 40 percent delinquency.⁵ While these levels are not universal to all less developed countries they are not, by any means, unique to the countries cited.

In brief, delinquency is viewed as a problem which limits the effectiveness of one of the prime tools of economic development. To achieve full benefit of that tool, credit delinquency must be minimized. However, very little effort has as yet been given to the underlying reasons or factors which cause delinquency. This is the problem to which this thesis is addressed.

The Objectives

The objectives of this study can be enumerated as:

1. to identify the causal factors of agricultural credit delinquency,

⁵These levels of delinquency were established by teams of the O.S.U. Agricultural Finance Center working in the various countries noted.

2. to establish the sources of origin of these causal factors, and
3. to make recommendations to remedy, eliminate or improve those causal factors.

The General Hypothesis

Within any situation there are many variables which are potential factors of agricultural credit delinquency. These potential variables are associated with three general sources of origin; the borrower, the lending institution, and the general environment beyond the borrower and lending institution. The general hypothesis of this study is:

By interviewing a sample of delinquent and nondelinquent credit users of the Banco de Fomento Agropecuario del Peru and by comparing significant differences in economic, geophysical, and cultural variables associated with the two groups (delinquent and nondelinquent credit users) casual factors associated with credit delinquency in Peru can be identified.

Subhypothesis A.--Further, variables associated with the borrower relating to his micro situation such as resources, production techniques and personal attitudes affect the delinquency levels of agricultural credit.

Subhypothesis B.--Further, variables associated with the leading institution such as institutional objectives, operational procedures, and institutional resources affect the delinquency levels of agricultural credit.

Subhypothesis C.--Further, variables associated with the general environment within which the borrower and lender operate such as

climate, infrastructure and social attitudes affect the delinquency levels of agricultural credit.

Methodology and Procedure

To test these general hypotheses, forty-eight variables have been selected and treated as specific hypotheses. Each of these variables has been tested for association or contribution to delinquency of agricultural credit, and those which are significant have been assigned to one of the three general sources of origin which are represented by the three subhypothesis above.

The field work was done in Peru by an Ohio State University Agricultural Finance Center team which worked with the U.S. AID Mission to Peru, The Banco de Fomento Agropecuuario del Peru, The Servicio de Investigacion y Promocion Agraria and The Oficina Nacional de Reforma Agraria. The Ohio State University team also collaborated with the respective US/AID contract teams from the University of North Carolina, the Universities of Iowa and the University of Michigan who were all working on agricultural problems in Peru. All of these agencies or institutions provided helpful direction and assistance, as well as serving as sources of basic information and data.

Beyond these agencies and institutions, three additional sources of information and data have been used.

1. Secondary materials of related problems and fields for background and apriori direction.
2. Empirical studies to acquire primary data about agricultural credit in Peru.
3. Informal observations by the researchers which afford additional insight into the problems in Peru.

Each of these sources has contributed substantially to the study and the subsequent findings, conclusions and recommendations.

The text of the study is presented in the following six chapters. Chapter II is the setting of the study, and is presented to acquaint the reader with Peru and the multiplicity of unique situations and factors in Peru.

Chapter III contains the survey of agricultural borrowers in Peru and the significant variables of the forty-eight tested. Within Chapter III the tests of significance of each of these factors is presented. Those factors which are found to be significantly associated with delinquency will be assigned to their respective sources of origin. The schedule which was used for gathering these data is presented as Appendix A.

All of the variables which are significant factors of delinquency are considered in three ways. The first compares the contrasts delinquent borrowers with nondelinquent borrowers. The second compares and contrasts groups of delinquent borrowers. The last consideration is the analysis of the opinions of Banco de Fomento Agropecuario del Peru's fieldmen concerning the major reason for delinquency for each of the individual loans.

The factors tested and found to be significant are then divided into subgroups as to source or origin: borrower, lending institution, or general environment. The subgroup defined as borrower source receives further analysis in Chapter IV.

In Chapter V the lending institution and its position and effects on agricultural credit in regard to the question of delinquency is

presented. This chapter consists of three parts. The first part is a general look at lending institutions as to their objectives, needs, and problems. The second part considers the Banco de Fomento Agropecuario del Peru in its unique position and performance. The third part considers factors of delinquency which have their source of origin in the lending institution.

Chapter VI is directed toward the third source of factors of delinquency or the general environment. This chapter considers the general environment in five segments: the geophysical and climatic segment, the agricultural segment, the economic segment, the political and legal segment, and the social and cultural segment. Those factors which have been identified as having their source of origin in the general environment are presented in the segment into which they most appropriately fit. This chapter draws heavily upon the informal observations of the researchers. This chapter will deal with factors of degree more than will the former chapters since the general environment is in many cases a given which cannot be changed easily or quickly.

Chapter VII is the summary, conclusions, and recommendations. Here an attempt is made to integrate the various parts into some total picture and to interpret the implications of this total picture in respect to agricultural credit and specifically to delinquency of agricultural credit. This chapter also deals with the limitations of the findings and the necessary research and analysis to fill the gaps between the objectives and the realized results.

CHAPTER II

THE GENERAL ENVIRONMENT AND SITUATION OF PERU

This chapter is presented to give the reader a clearer idea of the unique environment or situation in which any institution in Peru must operate. It also provides a more complete view of the problem and study setting. The various components of this environment are in most cases inter-related and interacting, and also affect the institution of agricultural credit. Before agricultural credit can be expected to achieve its maximum potential, awareness and consideration of the environmental situation must be made. Therefore, this rather brief sketch of the general environment and situation in Peru is presented so that the reader may be aware of the environmental factors which can affect the success of agricultural credit institutions in Peru.

The Land and Climate

One of the major environmental considerations is the unique land and climate arrangement found in Peru. The country is distinctly divided into three major geographic regions: The Costa or coastal plain, the Sierra or Andean highlands, and the Selva or Amazonic jungle. Each of these are distinct in topography, climate, and types

of problems. While the country is in the tropic zone, it is modified by two major factors: the Humboldt Current and the Andes Mountains.⁶

Western Peru, or the Costa, is the smallest in area of the three regions but it is the most important agricultural area of Peru in consideration of value of production and accessibility to markets. The Costa runs the length of Peru (1,410 miles), though it is extremely narrow, ranging from 5 to 40 miles in width. The Costa ranges in altitude from sea level to about 5,000 feet, however, it is basically a "near-sea-level" area.

The Costa is one of the driest regions in the world due to the offshore Humboldt Current. The Humboldt Current is a cold current which causes all rain to fall off the coast of Peru. This limits agriculture on the Costa to areas that can be irrigated. Most of these irrigated lands are found in some fifty valleys crossing the Costa. However, only about twenty of these valleys have continuously running rivers. Since these rivers find their source in the Andes, as a result of the Andean rainfall, which is sporadic, even those with constant water sources have a great deal of fluctuation in amounts of water available over a single year, as well as between years. As a result, the agriculture of the coast is completely dependent on the rainfall in the Andes.

The temperature of the Costa is hot to temperate, again being affected by the Humboldt Current. However, it is always warm enough

⁶The terms: Costa, Sierra, and Selva are the common terms applied to the three geographic regions both in Peru and by literature about Peru and shall be used in this paper as defined above.

for continuous agricultural production, the major limiting factor being water.

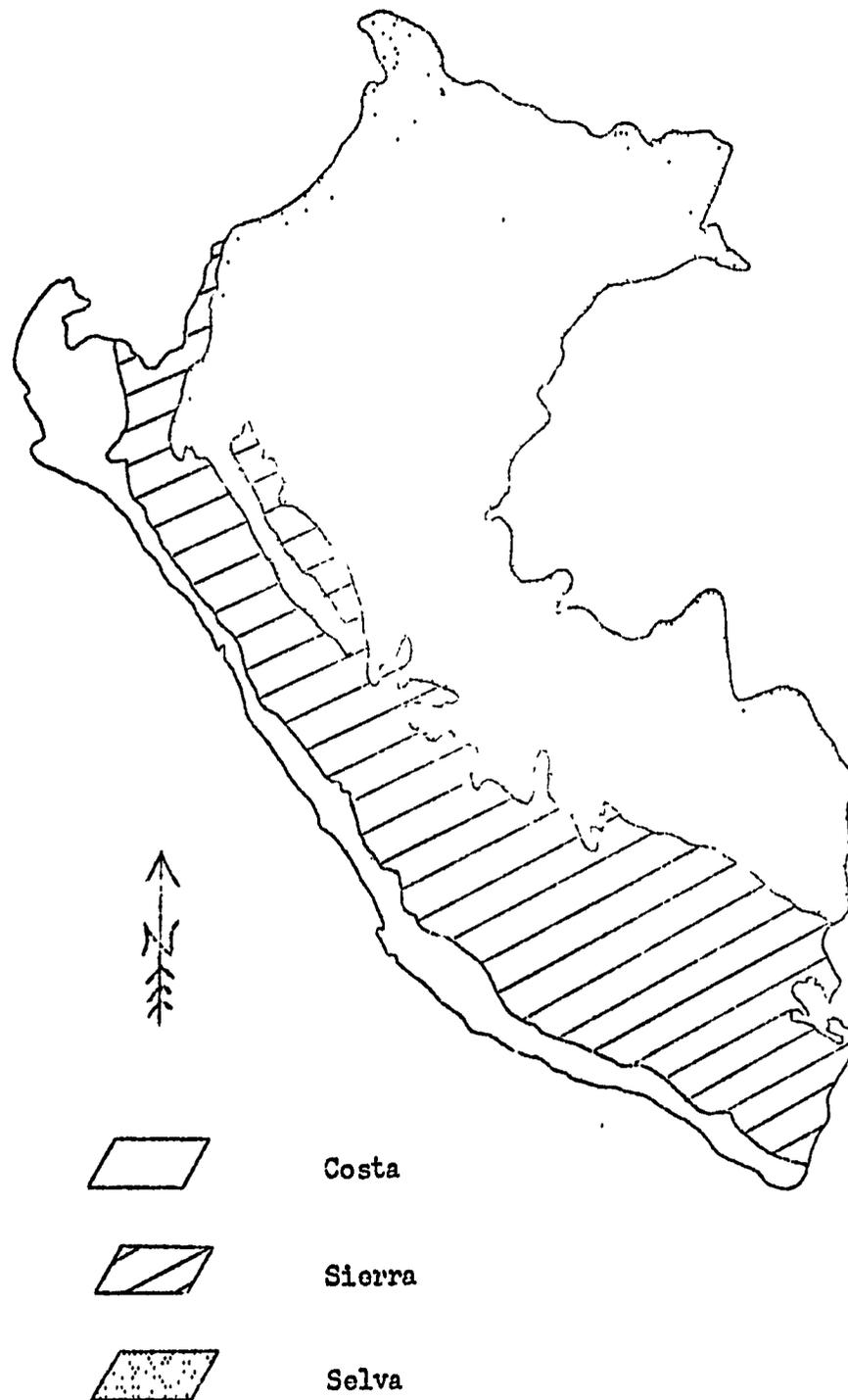
The Sierra or the central backbone of Peru also runs the length of Peru and ranges from 200 to 250 miles in width, making it the second largest physical region in area. It has the largest population and the greatest amount of land devoted to agriculture of the three geographic regions.

The Sierra varies from 5,000 to 22,200 feet in altitude and most of the usable passes through the Sierra are over 12,000 feet. As a result, the Sierra effectively separates the Costa from the Selva or eastern Peru thus greatly limiting transportation and commerce between the Costa and Selva. While some agriculture is carried on on the slopes of the Sierra, most of it is found in the numerous inter-range valleys and on the high "altiplano" of the southern Sierra.

The temperature of the Sierra is cool to frigid, depending upon the altitude. The Sierra is dry, but most of it receives sufficient rainfall to support agriculture. The rainfall is of a seasonal nature coming primarily during the period of January to April and thus dictates the period of agricultural production. There is a history of droughts and chronic frosts, which not only affect the Sierra, but the droughts also cause water shortages for the irrigation-dependent Costa agriculture.

The third general geographic region is the Selva, or the jungle region, which forms the eastern part of Peru and lies in the upper Amazon basin. This region makes up nearly 60 percent of Peru's area.

Figure 1: Physical Map of the Three Regions of Peru



Source: Cole, J. P., Latin America: An Economic and Social Geography,
Butterworths, Washington, 1965, p. 290.

but has only about 5 percent of the population. This region has two areas, the high jungle or "mountana" found on the eastern slopes of the Andes and the low jungle; that is, in the actual Amazon basin.

The climate in the Selva is typically a hot, humid rain-forest type with up to 130 inches of rainfall per year. Although there are savanna areas within the region, they are limited in size and number. The region has many limitational factors in regards to agriculture: excessive rainfall, many plant and animal diseases, extremely hot temperatures, rapid reversion to native growth, and limitations to transportation. The upland sector has the greatest potential for agriculture, while the rest of the region has some potential for lumber and forest products.

Population

The population of Peru is estimated to be about 12 million persons at present with a 3 percent average yearly increase.⁷ The distribution of the population in 1963 was 51.8 percent in rural areas, 14.4 percent in towns of less than 10,000 persons and 33.8 percent in cities over 10,000 persons.⁸ The ethnic make-up of this population is approximately 50 percent Indian, 33 percent Mestizo, 12 percent European, and 5 percent Negro or Oriental.⁹ The distribution

⁷United Nations, Statistical Yearbook 1965, New York, 1966, p. 80.

⁸USDA-ERS, Foreign Regional Analysis Service, Peru Market and Competition for U. S. Farm Products, ERS Foreign 157, Washington, 1965, p. 3.

⁹The Grolier Society, Latin America and General Articles, Grolier, Inc., New York, 1965, p. 141.

of these ethnic groups closely follows the geographic regions noted in Table 1. That is, the Indian population is predominantly found in

Table 1
Land and Population Distribution by Regions

Region	Percent of Land Area ^a	Percent of Population ^b
Costa	10.6	44
Sierra	30.0	51
Selva	59.4	5

^aSource: Convenio de Cooperacion Technica, Estadistica Agrario Peru, 1963, Lima, 1964, p. 9.

^bUSDA--Economic Research Service--Foreign Regional Analysis Division, Peru Market and Competition for U. S. Farm Products, ERS-Foreign 157, Washington, 1965, p. 3.

Table 2
Average Rainfall and Mean Temperature
for Selected Cities^a

City	Region	Average Yearly Rainfall (Inches)	Mean Temperature (Fahrenheit)
Lima	Costa	1.6	65.4
Trujillo	Costa	1.18	69.3
Mollendo	Costa	.85	64.4
Arequipa	Sierra	4.17	56.8
Cuzco	Sierra	23.50	53.5
Iquitos	Selva	130.30	76.6

^aSource: Encyclopedia Americana, Volume 21, New York, p. 643.

the Sierra and Selva, while the Mestizo, European and Oriental population is found primarily in the Costa. There is a population migration movement at present from the Sierra to the Costa and from the rural areas to the urban areas which is constantly changing the above picture.

The ethnic and regional considerations are also pertinent in consideration of economic activity, of political activity and of formal education.¹⁰ All of these reside predominantly with the Mestizo-European population in regard to ethnic considerations. Regionally, they are found primarily on the Costa and in the urban areas. This means that a disproportionately small segment of the country and population has most of the economical, political, and educational influence.¹¹

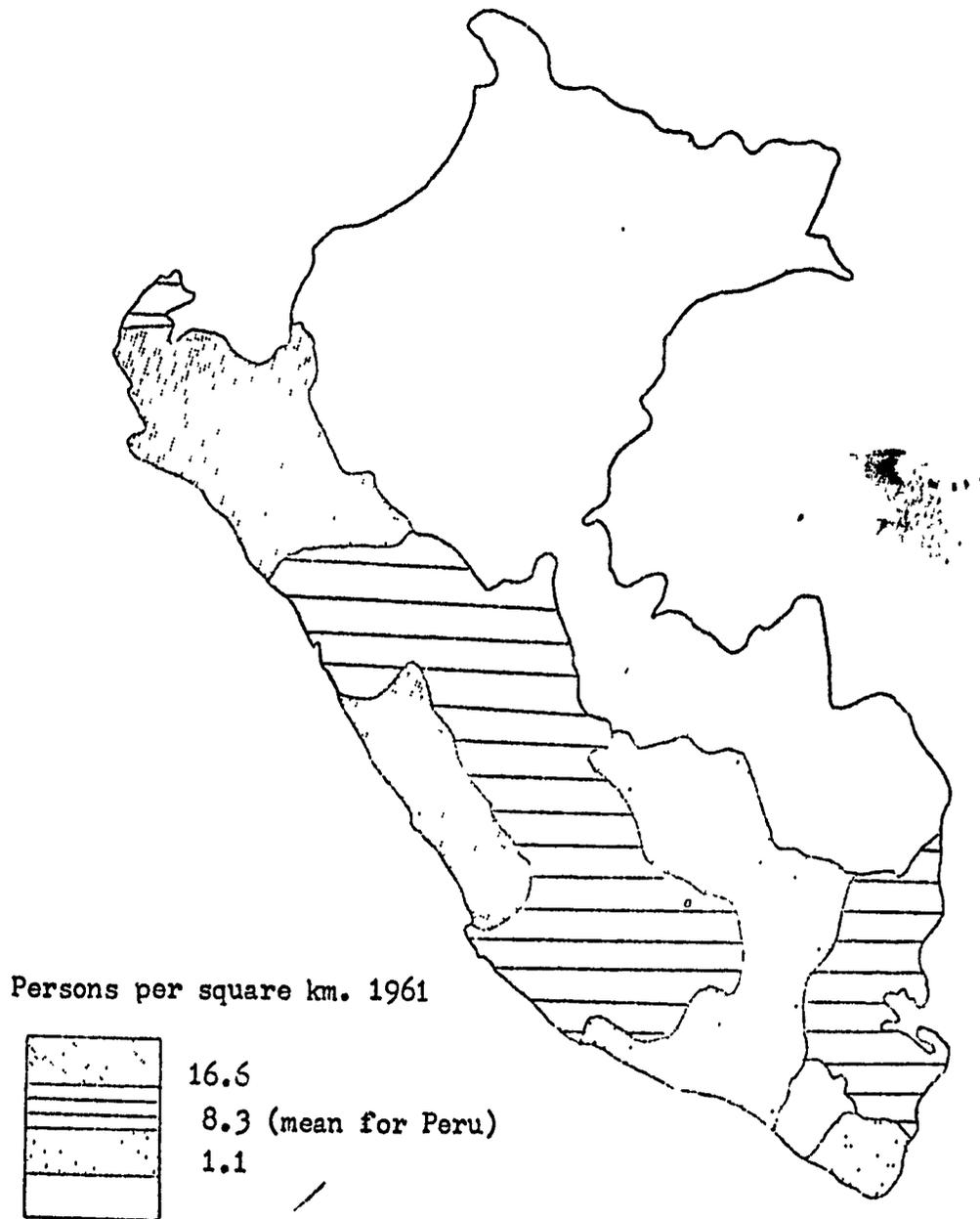
The level of literacy in 1961 for Peru was placed at 61 percent for the population ten years of age and older.¹² However, this estimate excluded some 400,000 to 500,000 Indians in the Selva region. While Spanish is the official language of Peru, it is estimated that only about 65 percent of the population speak Spanish. Those who do not speak Spanish are found primarily in the Selva and in the Sierra, and are usually Indian in ethnic origin.

¹⁰This statement draws upon many authors and their works; the prime sources being Ozzie G. Simmons, "Criollo Outlook in Mestizo Culture of Coastal Peru" and Oscar Hunez del Prado, "Aspects of Andean Native Life." Both works appear in Contemporary Cultures and Societies of Latin America, edited by Dwight B. Heath and Richard M. Adams, Random House, New York, 1965.

¹¹Simmons, O. G., "The Criollo Outlook in Mestizo Culture of Coastal Peru," Contemporary Cultures and Societies of Latin America, Ed. by Heath and Adams, New York, Random House, 1965.

¹²United Nations, Demographic Yearbook 1963, New York, 1964, p. 350.

Figure 2: Density of Population



Source: Cole, J. P., Latin America: An Economic and Social Geography.
Batterworth's, Washington, 1955, p. 290.

The Agriculture

While Peru is basically an agricultural country, with some 50 percent of the total labor force devoted to agriculture, the country does not lend itself readily to agricultural pursuits. The Costa agriculture is dependent on irrigation, the Sierra is plagued by drought and frost, while the Selva suffers from inaccessibility, disease, and necessity to clear the forests. Nor is the soil in Peru particularly good for most agricultural pursuits, with only a very small portion suitable for agricultural activities. Although within Peru a very wide variety of crops and animals can be grown due to the variance in altitudes and resulting climates, there is a great difference in the distribution of the land, of the techniques used, of the tenancy, and of the returns to agricultural pursuits within Peru. Some of these considerations will be pointed out in the following discussion and tables.

In Table 3 it can be seen that while the Costa does not have the greatest absolute area devoted to agriculture, it does have the greatest return in value of production. This is true for two major reasons; first, the Costa has much better yields on the average than does either Sierra or the Selva, ranging from two to five times as great and second, the type of crops grown on the Costa are more commercial in nature than are those of the other areas, especially those of the Sierra. These Costa crops have higher monetary returns per hectare, as well as better accessibility to markets. In Table 4 the five most important crops are shown as to their location and value to further demonstrate the differences among the regions.

Table 4
The Five Major Crops in Peru, 1963^a
(By Value)

Product	Region	% of Total Crop Area in Peru	% of Total Crop Value in Peru
Sugar	Costa	4	17.8
Cotton	Costa	12.2	17.5
Fruit	Costa	3	12.6
Potatoes	Sierra	11	11.7
Vegetables	Costa	3.7	10.4
	Total	33.9	70.0

^aSource: Convenio de Cooperacion Tecnica, Estadistica Agraria Peru 1963, Lima, Peru, 1964, p. 15.

The major portion of the income for agricultural crops comes from a few crops to which a fairly small percentage of the land is dedicated. If potatoes is excluded from this group, 58.3 percent of the agricultural crop income comes from 22.9 percent of the agricultural cropland and virtually all of this is found in the Costa region.

The Peruvian agricultural situation is further aggravated by the low agricultural land per capita ratio, and the declining food production index. Peru has been able to maintain an agricultural land per capita ratio of about .18 hectares per capita over the past ten years.¹⁴ However, while this is already one of the lowest in the

¹⁴United Nations, Demographic Yearbook 1963, New York, 1964, p. 22.

world it can be expected to fall even farther because of the high capital cost of bringing additional land under cultivation in Peru and rising population. While total agricultural products have increased in value over the past ten years, the actual per capita food production index has fallen from 100 in 1955-1956 to 93 in 1963-1964.¹⁵ This is due in part to an increase in population but it is also due in part to the incidence of the agricultural production increases. In relative terms, these increases have been in the Costa by export type crops such as cotton and sugar.

The size of the farms and the amount of arable land per agricultural worker have significance when development or credit usage are considered. Each farm laborer in Peru has about 1.27 hectares of arable land to work, or just over three acres. The size of farms is extremely small on the average; this can be seen from an analysis of the data in Table 5. This limits the amount of capital that can be productively and economically absorbed by individual farmers in Peru at this time.

The communal lands held by communities make up the largest number of farms and the size is computed by dividing lands by family heads. This number was placed at over 182,000 by SCIPA in 1960. In addition, there were an estimated 42,000 farms on the Costa, 26,000 in the Sierra, and 600 in the Selva in 1960.¹⁶

¹⁵Ibid., p. 33.

¹⁶Edited by "Empresa de Mensajero Agricola, S. A.," Almanaque Agropecuario del Peru 1960, Lima, 1960, p. 24.

Table 5
Farm Size and Distribution by Size (1960)^a

Has	Nation Total No.	% of Total	%/Class Costa	%/Class Sierra	%/Class Selva	%/Class Communal Lands
0-5	232,827	92.6	73.0	64.6	80.1	100
6-10	6,537	2.6	10.2	8.5	6.6	0
11-50	7,093	2.8	8.3	13.6	6.0	0
51-100	1,445	0.6	1.3	3.4	2.0	0
101-500	2,143	0.9	1.7	5.4	2.3	0
501-000	1,410	0.5	0.5	4.5	3.0	0
Total	251,455	100	100	100	100	100

^aSource: Almanaque Agropecuario del Peru 1960, Edited by "Mensajero Agricola," Lima, Peru, 1960, p. 24.

However, most of the communities holding communal land are found in the Sierra which substantially raises the number of farms in that area to something like 200,000 farms.

By multiplying two and one-half (the average land holdings of the 0-5 hectares class) by S/7,438 (the average value of production per hectare in 1963) it is found that the average gross income for these small farmers was S/18,595 in 1963. However, if the crop returns of the exclusively Costa crops are excluded, the average gross return of the Sierra and Selva farmers is found to be S/9,032.50 or less than one-half of the national average.¹⁷ This fact will be found significant later in consideration of the incidence of agricultural credit, as well as the incidence of delinquency by regions.

The final point of consideration of Peruvian agriculture is the extent of mechanization. The basic unit of production and power is the farmer himself for most of Peru. It was estimated that only 36 percent of the cultivated area in 1960 was cultivated by tractor.¹⁸ Of the 6,654 tractors noted in 1959, 5,702 were on the Costa, 838 were on the Sierra, and 114 were on the Selva.¹⁹ However, due to the small size of the farms, and the low returns realized by most Peruvian farmers, it is by no means certain that larger numbers of tractors, particularly in the Sierra and in the Selva, would be economically justified.

¹⁷Convenio de Cooperacion Tecnica, Estadistica Agraria Peru 1965, Lima, Peru, 1964, p. 15.

¹⁸Edited by, "Empresa de Mensajero Agricola, S.A.," Almanaque Agropecuario del Peru 1960, Lima, 1960, pp. 214-220.

¹⁹Ibid., pp. 214-220.

From this short summary of Peruvian agriculture, it becomes evident that while agriculture is the basic pursuit of the majority of the population, the distribution of commercial agriculture and advanced techniques is extremely unequal. This in turn limits, to a large extent, the areas and persons who may gainfully use agricultural credit at this time.

Transportation and Other Infrastructural Considerations

Transportation in Peru is extremely varied and employs almost every known means. All of the standard land, air, and water transportation types are found. The question of transportation, like almost everything in Peru, is determined to a large extent by the geographic regions. As a result, absolute distances mean far less than do relative distances. An example of this is the trip from Lima, the capital in the Costa, to Iquitos, on the Amazon River, which is about 600 air miles. It is easier to ship heavy equipment to Iquitos from Lima, via the Panama Canal and the Amazon River, a trip of several thousands of miles and several weeks than overland. Another example is the trip from Lima to Huancayo, a city in the Sierra, about 120 air miles from Lima. This trip by road is actually about 200 miles and about eight hours in an automobile. Due to geographic problems, roads between two points are often three or more times the air distance between the points. Likewise, the terrain makes these roads both very expensive and very difficult to construct and to maintain.

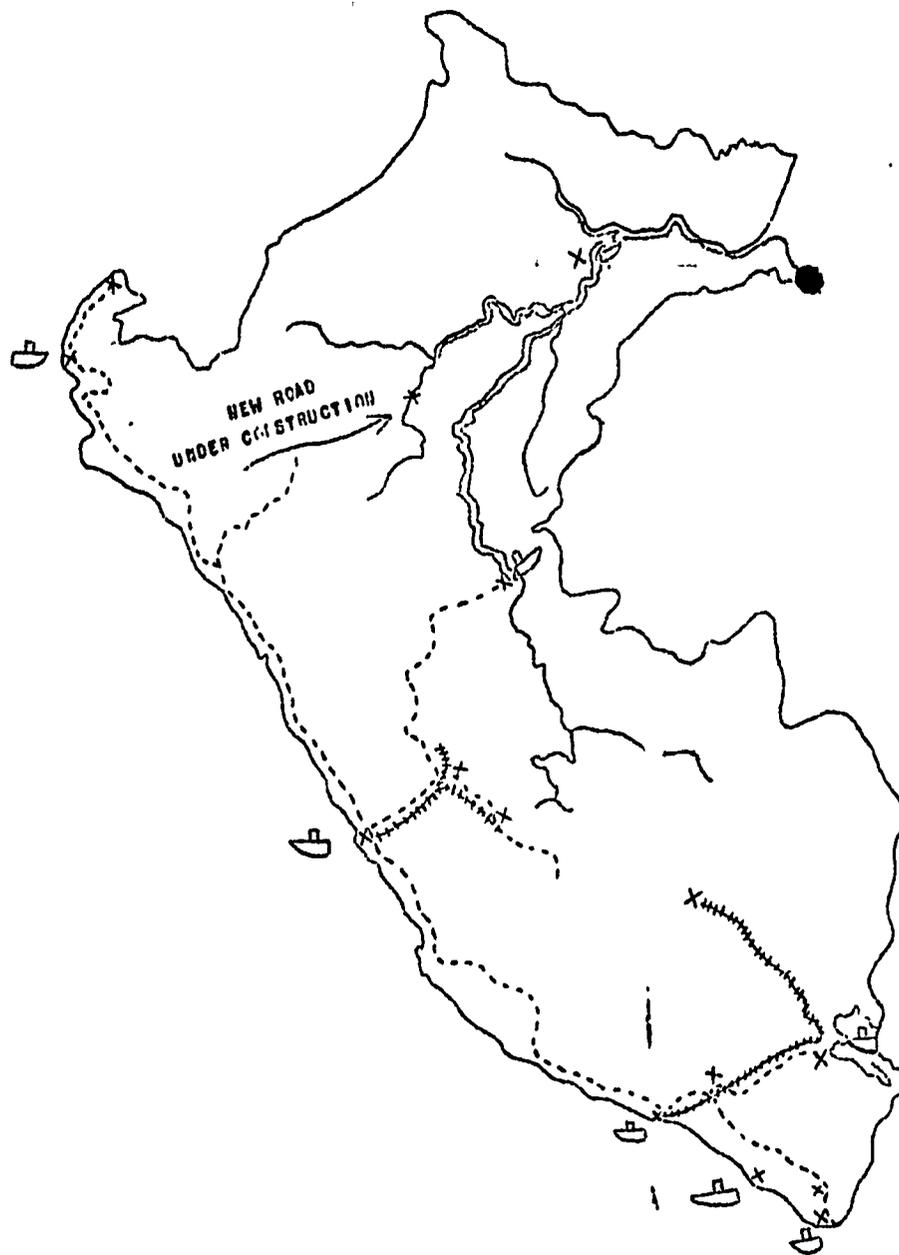
The whole of Peru is tied together only by air transportation. Due to the prohibitive cost of air freight at this time, and the limitations of the types of aircraft being used, air transportation is at present limited basically to passenger and mail service.

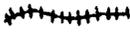
Commercial land transportation, by rail or road, is restricted to limited regions of Peru. Only the Costa approaches complete accessibility, arising from the Pan-American Highway which runs the length of the Costa. The only other roads of note are the Central Highway between Lima-Pucallpa and Lima-Huancayo. This is the only road connecting all three regions of the country. The other is the Arequipa-Puno Highway in southern Peru. There are also railroads paralleling these two highways and a connecting railroad between Cuzco and Juliaca (Puno).

There is a northern highway now being constructed which will tie the northern Costa with the northern Selva. However, this road is not expected to be finished for at least five years.

Water transportation is found in all three regions; the Costa has the Pacific Ocean; the Selva has the Amazon River and its tributaries, while the southern Sierra has Lake Titicaca. However, all of these have limitations. The Pacific serves mainly as a route to international markets, and has little practical value internally since it coincides with the only existing transportation system of any degree of commercial completeness. The Amazon and its tributaries do form a natural transportation system in the Selva region, however, they are, in fact, eastward looking, or away from the rest of Peru. Finally,

Figure 3: Transportation Systems



- X Major Cities or Markets
-  Major River, Lake, or Ocean Ports
-  Major All Weather Roads
-  Major Railroads
-  Navigable Rivers

Lake Titicaca serves only as a short leg for transportation between Peru and Bolivia and has limited application for internal trade since it is confined to a very small region of Peru.

Transportation is a key to accessibility and inter-regional activities of all sorts. As can be seen in Figure 8, the availability of commercially usable transportation is extremely limited in Peru. As a result, large segments of the country are stagnated due to the lack of transportation facilities. This will be discussed further under the "Economic Situation."

The other infrastructural systems which will be briefly considered are electricity and communications. In both cases the incidence of these services is much greater on the Costa than in the other regions. However, the government has constructed a radio system that gives a fairly comprehensive coverage of the country. The government television system is more limited and reaches only the Costa and a few selected Sierra regions.

The production of electricity in Peru increased 40 percent from 1960 to 1963, however, the incidence of the production was 70.8 percent in the Costa, 29.0 percent in the Sierra and only 0.2 percent in the Selva, and of the total production about 41 percent was in the Lima area.²⁰

The Government

The present government of Peru is democratic in form and of a moderate to liberal nature. It is both concerned with and committed

²⁰Instituto Nacional de Promocion Industrial y Banco Industrial del Peru, Situacion de la Industria Peruana en 1964, Lima, 1964, pp. 50-51.

to the total economic development of the country, as well as to the welfare of the total population. However, these two objectives are not always compatible in the short run due to the limited resources and the effects of various programs upon each other in the short run. This is quickly noted in agriculture as opposed to industry. Many tax and tariff concessions have been made to industry while the agricultural sector has not received a like magnitude of concessions. This factor is especially evident in regard to importation of equipment.

There is also some disparity in politics within the agricultural sector. The major export crops, sugar, and cotton, face better policy situations than do the majority of other agricultural enterprises. Also affecting agriculture is the governmental policy of maintaining low prices for staple commodities. While this is laudable from a welfare point of view, a price ceiling on agricultural products puts producers in a very difficult situation since there is not a reciprocal ceiling on agricultural input prices. Thus, farmers are placed in a price-cost squeeze.

The problem that the Peruvian government faces is not unique, but is merely a restatement of the fact that any action has a reaction. The Peruvian government must make choices as to priorities, and it is not the purpose of this paper to make normative evaluations of these choices. However, it must be kept in mind that those choices that the government makes will have an effect on agriculture and agricultural credit.

The Economic Situation and Agriculture's
Position

The Peruvian economy is expanding at present and is one of the few economies in Latin America that have shown continued expansion over the past ten years. It has also demonstrated a higher rate of growth in GNP than has the Latin American area in general over the same period.

Peru, like most developing countries, is experiencing a change in emphasis of activities among the various economic sectors and in percentages of the total economic product that each contributes. For instance, in 1950, the agricultural sector made up 25.7 percent of the total economic product and was the leading sector. However, while agriculture has grown absolutely, it has shrunk relatively to 19.6 percent of the GNP in 1964.²¹

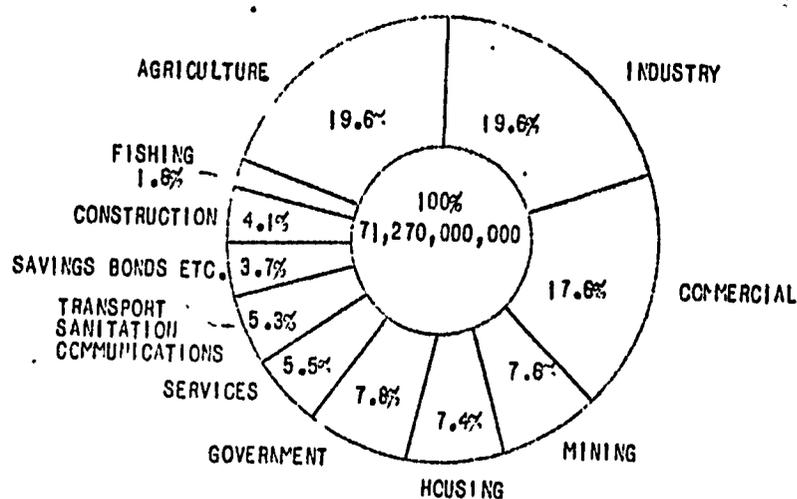
The growth of the GNP of Peru from 1960 to 1964 in constant 1960 soles was from 55,642.6 million to 71,270.0 million. The average yearly increase was 6.4 percent. The leading growth sectors during this period were industry, (7.5%); commerce, (7.8%); construction, (13.4%); and fishing, (12.7%), while agriculture's growth rate (5.5%) was below the average.²² The contribution to the GNP for 1964 by sectors is seen in Figure 4.

Due to an average yearly population growth of about 3 percent, the increase in the per capita product was only 3.4 percent per year

²¹Ibid., p. 39.

²²Ibid., p. 23.

Figure 4. Contribution to the Peruvian GNP by Sectors in 1964^a



^aSource: Situation de la Industria Peruana en 1964, Instituto Nacional de Promocion Industrial Banco Industrial del Peru, Lima, Peru, 1964, p. 24.

or 14.4 percent in total for this period.²³ This per capita increase expressed in soles changed from S/5,777 per capita to S/6,606 per capita in constant (1960) terms, or to S/8,500 per capita in current (1964) terms.²⁴ This shows a total price increase of 28.7 percent over this period.

The international trade of Peru is expanding rapidly in both exports and imports. Imports expanded from \$374,780,000 in 1960 to \$579,555,000 in 1964, which is a 54.6 percent increase. Exports expanded from \$433,075,000 to \$666,990,000 during the same period for a 53.9 percent increase.²⁵

²³Ibid., pp. 22 and 24.

²⁴Ibid., p. 24.

²⁵Ibid., p. 30.

It can be seen that exports and imports have been increasing at about the same rate. As a result, Peru has enjoyed a favorable balance of trade during the period of 1960 to 1964. Only in 1963 was there a negative balance and this was due to a negligible increase of exports in 1963 of about 0.2 percent while imports continued to rise. Much of the lack of export increase was due to concern over proposed nationalization of mineral rights. This concern has since abated

The composition of Peru's exports and imports are fairly typical of developing countries. Peru's exports basically consist of primary products of three major classes: agricultural, mineral, and fish products. In 1964, these three made up 95.9 percent of Peru's total exports or 30.6 percent, 25 percent, and 40.3 percent, respectively.²⁶

Fish products have shown the largest absolute, as well as relative increase, and have provided Peru with much of its international trade strength. Fish products export value rose from \$52,000,000 or 12 percent of the total exports in 1960 to \$166,869,000 or 25 percent of the total exports in 1964.²⁷

Agricultural products, on the other hand, have shown a relative loss over the same period from 35.8 percent to 30.6 percent of the total exports. But they have risen absolutely from \$146,590,000 in 1960 to \$203,931,000 in 1964.²⁸ This is due partly to the world market situation of the four major agricultural exports: cotton, sugar, coffee,

²⁶Ibid., pp. 32-33.

²⁷Ibid., pp. 32-33.

²⁸Ibid., pp. 32-33.

and wool, but it is also due to the many limitations on agricultural expansion in Peru.

This favorable balance of trade has enabled Peru to increase her gold reserves from \$24 million in 1960 to \$67.4 million in 1964, as well as increasing the total reserve of gold and hard foreign currencies from \$45.1 million in 1960 to \$144.4 million in 1964. This has afforded the "sol" strength in the world market and international stability even though there is a fairly substantial rise of price levels domestically.

Most of Peru's imports are of manufactured or partially manufactured goods. The largest single class of imports is capital-goods which make up 39.9 percent of the total imports in 1964. Intermediate goods or partially manufactured goods formed 30 percent in 1964 while consumer goods, durable and nondurable, formed 26 percent of the total.²⁹ Of these, consumer goods showed the greatest relative change and was the only one of the three to show a positive relative change. In capital goods most classes gained or at least held their relative positions, however, agricultural equipment and transportation equipment fell. Part of this is due to the tariff structure and part is due to the agricultural situation which has already been noted.

When looking at the economic situation in Peru it becomes evident there are extreme regional differences in the amounts of economic activity. This is true for both international trade and domestic trade

²⁹Ibid., p. 35.

activities. Cole points out that 80 percent of all Peruvian exports come from the Costa region.³⁰ Agricultural export products demonstrate a similar situation. Cotton and sugar, which make up 76 per cent of the agricultural exports, come exclusively from the Costa. Wool, which makes up 5.9 percent of the agricultural export, comes primarily from the Sierra. Coffee, which makes up 18.1 percent of the agricultural export, comes from the Selva.³¹

These regional differences are pointed out very explicitly when the per capita disposable income and the index of disposable income of 1960 are compared to those of 1950 in each region. These comparisons can be seen in Table 6.

A major determinant of the changes noted above is accessibility. When a map of the commercially active areas is superimposed on a map of transportation in Peru, the two correlate almost exactly, as shown in Figure 11.

The nonactive or stagnating areas are limited to intra-regional trade and to a large extent limited to a nonmonetary barter economy. As a result, these areas and the people in them, are excluded from the more dynamic economic activities of Peru. These areas make up the greatest part of the physical area of Peru and are primarily in the Sierra and Selva. Beyond the physical location of trade, one

³⁰Cole, J. P., Latin America an Economic and Social Geography. Butterworths, Washington, 1965, p. 291.

³¹Op. cit., Instituto Nacional de Promocion Industrial y Banco Industrial del Peru, pp. 32-33.

Table 6
Per Capita Disposable Income by Region
(Prices = 1960)^a

Year	National Average	Costa	Sierra	Selva
(soles per capita)				
1950	3418	6772	2564	1536
1960	3626	6908	2523	1168
(Index of Gain 1950 = 100)				
1950	100	100	100	100
1960	106	102	98	76

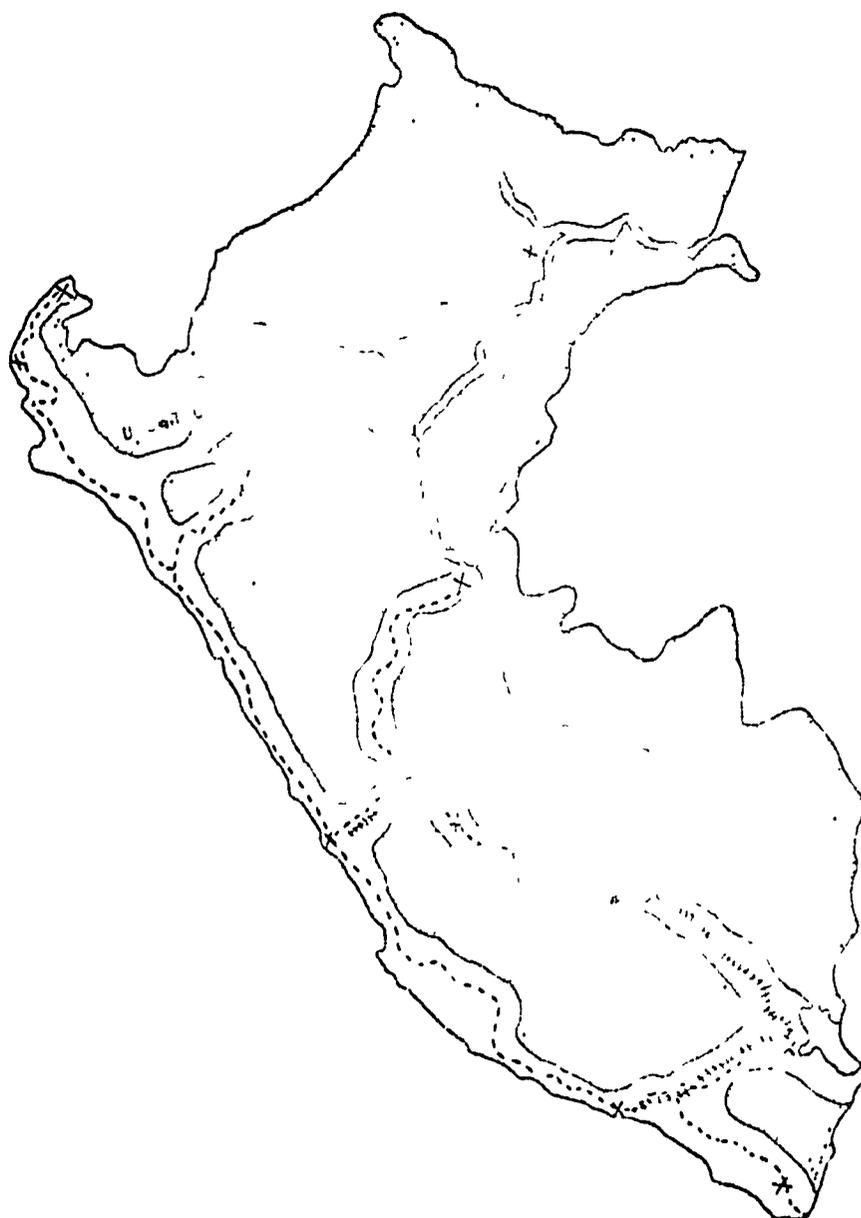
^aSource: Plan Nacional de Desarrollo Economico y Social del Peru, 1962-1971.

estimate, made in 1963, was that two-thirds of the total population was not economically active but that the incidence of inactivity is much greater in the stagnating areas.³²

The active trade areas engage in inter-regional, as well as international trade, and basically form the money economy of Peru. These active areas include the major portion of the Costa and the larger urban areas of the Sierra and Selva. However, much of the active trade of the Selva region is eastward looking and is shipped by way of the Amazon River rather than to Lima or to other areas of Peru.

³²Ministro de Hacienda y Comercio, Plan Nacional de Desarrollo Economico y Social del Peru 1962-1971, Lima, Peru, 1963, p. 9.

Figure 5: Trade Areas and Major Transportation Systems



- X Major Markets
- - - Major All Weather Roads
- + + + + Railroad
- ~ ~ ~ Navigable rivers
- ▤ Active Interregional Trade Sectors
- ▭ Stagnating or Intraregional Trade Areas

Source: Colo, J. P., Latin America: An Economic and Social Geography,
Batterworth's, Washington, 1965, p. 290.

It is evident that the Peruvian economic situation is something of a bi-modal situation. That is, Peru has a fairly strong international trade position and several very active economic sectors. However, Peru also has a large number of domestic resources that are little more than neutral, economically, and these cut back the general standard of living, the per capita product figures, and the GNP.

CHAPTER III

IDENTIFYING FACTORS AFFECTING BORROWER DELINQUENCY AND THE ORIGIN OF THESE FACTORS

This chapter has three purposes; to describe the study of Banco de Fomento Agropecuario del Peru³³ borrowers, to establish which factors of that study are significant indicators of delinquency and to establish the source of origin of each of the significant factors.

Methodology of the Study

The purpose of this field study was to acquire primary data on all types of borrowers from all parts of Peru. Of special interest was the acquisition of samples of delinquent and nondelinquent borrowers. Each of the fieldmen of the BFAP was asked to administer ten schedules in his respective area. Five of these schedules were administered to the first five nondelinquent borrowers which he encountered in his normal work, and five schedules to the first five delinquent borrowers encountered in his normal work.

This technique assured comprehensive coverage of Peru geographically, substantial samples of both delinquent and nondelinquent borrowers, and hopefully minimized sample bias. The timing of the study cut across both the harvest and marketing periods of most of the major crop enterprises so serious enterprise bias is not a problem.

³³In all subsequent discussions the Banco de Fomento Agropecuario will be referred to as "BFAP."

The sample is a purposeful sample with its major purposes being to acquire a sample of BFAP borrowers and to include in this sample both delinquent and nondelinquent borrowers. The Chi-squares test was used to test the study sample against the total farm population for farm size and geographic region. No significant difference is noted between the total farm population data available and the BFAP sample for these two points.

The sample seems to be a valid reflection of the population as to farm size and region for two reasons. The BFAP is charged with helping the small and medium farmers and not just the large commercial type farmers. They have achieved a cliental which is nearly a proportional reflection of the farm population in regards to farm size. Secondly, the BFAP fieldmen are assigned to the various regions of Peru in about the same proportions as the farmers are divided among the regions.

The subsamples of delinquent and nondelinquent borrowers show slight variations from the population in regards to farm size but neither shows a significant difference. This can be attributed to the high degree of overlay between the two subsamples in regards to the variable of farm size. However, when the question of enterprise is considered, the delinquent subsample shows significant variation from the population and from the nondelinquent subsample.

The distribution of the schedules to the field personnel was preceded by letters of introduction and purpose from the Planning Office of the BFAP. In June of 1966, the schedules were taken to the

various branches and the purpose and the procedure were explained to various branch managers. The managers then handled the distribution and operation in their respective branches.

In total, 1100 schedules were distributed, of which approximately 800 were completed and returned by August 21, 1966. Of the 800 returned, 735 were deemed usable: 401 schedules of nondelinquent borrowers and 334 schedules of delinquent borrowers.

Analysis of the Borrower Study

Upon completion of the survey forty-eight variables were selected and tested as possible factors of delinquency. These variables are quite divergent in type and equally divergent in effect. They are all variables which can be found and studied at the micro or borrower level, and while some may not be factors of delinquency in themselves, they may serve as indicators of other delinquency factors.³⁴

Due to the multiplicity of variables and of all types of ranking (nominal, ordinal and interval scales) and because of the nominal ranking of "delinquency--nondelinquency" as the dependent variable, many of the usual techniques of analysis such as regression analysis or factor analysis, cannot be meaningfully used. However, since the basic purpose is to establish which variables are factors associated with delinquency, it was determined that Chi-square tests between the distributions for delinquent and nondelinquent borrowers and among groups of delinquent borrowers could point out those variables which

³⁴The list of the forty-eight variable is presented as "Appendix C" of this thesis.

show significant differences between groups and which, as a result, appear to be factors of delinquency.

The Chi-square test, like most significance tests, enables researchers to place probability values upon empirical data as to the validity of the assumptions the researcher makes. It is arbitrary in that the researcher establishes what levels shall be significant. The tests do not eliminate errors, but merely establish the probabilities of errors.

While the Chi-square test is the primary device employed to identify significant factors associated with delinquency, the interpretation of the Chi-square test results also considers the percentage distributions of the delinquent and nondelinquent borrower groups and factors of which the author is aware, but which the test could not discount. These distributions are presented in Appendix B.

Delinquent Versus Nondelinquent

The first step of the analysis is a comparison and contrast of the delinquent borrowers with the nondelinquent borrowers. Chi-square tests of significance have been run on all of the listed variables. Based on these tests, the significant variables were separated into three groups by level of significance of difference between the delinquent and nondelinquent borrowers. Group one includes those found to be significant at the five percent level; group two, between five and ten percent; group three, between ten and twenty percent.

Twenty-six of the 48 variables considered are included in these three groups with significance above the twenty percent level. Each of the variables in these three groups is reviewed on the following pages, with these three groups being summarized in Tables 7, 8, and 9.

The use of absolute Chi-square values for ranking of variables in Tables 7, 8, and 9 is for convenience rather than to indicate real levels of significance. It must be remembered that the Chi-square level of significance must be interpreted by degrees of freedom and not directly as a Chi-square value.

Variable X_1 : (year the loan was granted) has the highest absolute Chi-square value, but much of the apparant difference between the delinquent and nondelinquent distributions can be discounted. The BFAP has a policy of not granting new loans to delinquent farmers. Because the study reported on the last loan of each borrower, many of the delinquent loans were granted earlier than were the nondelinquent loans. While this does explain away much of the significance of variable X_1 , it must be remembered that the BFAP has shown a reduced delinquency level in the past year, but even part of this is due to political and legal measures.

The distributions of variable X_2 : (age of the borrower) show that the nondelinquent borrowers are younger than the delinquent borrowers. This fact alone says little, but when variables such as X_{15} (use of veterinary products), X_{16} (use of supplemental feeds), and X_{22} (use of fertilizer and type used) are also considered it seems that non-delinquent borrowers, who are relatively younger, are more apt to use

Table 7
Variables Showing Significance at the 5% Level

Variable	Degrees of Freedom	Chi-Square Value
X ₁ The year loan was granted	8	69.51179
X ₂ Age of the borrower	57	61.22815
X ₃ Number of BFAP loans in past 3 years	7	57.36453
X ₄ Total income	8	48.19543
X ₅ Savings Account	1	29.84209
X ₆ Climatic problems	8	29.76672
X ₇ Adequacy of water	1	18.44026
X ₈ Farm appraisal by fieldman	8	17.11413
X ₉ Interest rate of the loan	6	13.44469
X ₁₀ Borrower's place of residency	1	12.32023
X ₁₁ Unexpected expenses during 1965-1966	1	9.66198
X ₁₂ Off-farm employment	1	7.92989
X ₁₃ Estimated potential of unused land	3	7.92678
X ₁₄ Other loans besides BFAP loan	1	5.44062
X ₁₅ Use of veterinary products	1	4.64325
X ₁₆ Use of supplemental feeds	1	4.38308
X ₁₇ Part of income goes to family	1	4.23327
X ₁₈ Administer farm directly	1	4.06225

innovations which indicate awareness and managerial skills. Because of these considerations, age appears to be a factor of delinquency.

The distributions of variable X_3 : (the number of BFAP loans in past three years) show nondelinquent borrowers have had relatively more. However, much of this difference can be explained in the same manner as the apparent differences of variable X_1 . That is, the BFAP does not make new loans to delinquent borrowers. But this variable cannot be readily disregarded since credit experience might be an important factor in delinquency.

Variable X_4 : (total income for the 1964-1965 production period) also shows a high Chi-square value. When the actual distributions are considered for this variable, it is noted that nondelinquent borrowers, as a group, have relatively higher incomes. Because of this, it would be expected that the nondelinquent borrowers would have greater repayment capacity. For this reason, X_4 seems to be a factor in delinquency.

Variable X_5 : (savings account) when considered with the actual distributions, shows that nondelinquent borrowers are much more likely to have a savings account. This ties in with total income, but also reinforces repayment capacity since savings can be used to repay loans even though production and returns from loan uses are insufficient to repay the loan. It might also indicate better managerial skills or attitudes, and is, therefore, thought to be a factor which could help indicate delinquency probability.

Variable X_6 : (climatic problems), when considering actual distributions, one finds that the delinquent borrowers face a greater variety and more intensive set of climatic problems than do the non-delinquent borrowers. There may be an element of rationalization here, but this still seems to be a valid factor that may affect delinquency.

The distributions of variable X_7 : (adequacy of water for production) show substantially more delinquent borrowers lack adequate water for production. Since much of Peru is arid or has limited rainy seasons, this factor becomes very pertinent in agricultural production. Where production is limited by the lack of water, revenues are limited and so is repayment capacity. Therefore, this variable is a very important factor of delinquency in Peru.

Variable X_8 : (farm appraisal by the BFAP fieldman) when considered with the actual distributions, shows the nondelinquent borrowers as having somewhat higher valued farms than the delinquent borrowers. This variable takes on more importance when variable X_{50} : (the appraisal of farm value by the owner) is considered. The latter variable is not significant, however, the fieldman's appraisal correlates slightly more closely to nondelinquent borrower's appraisals than they do with delinquent borrowers. This points to two conclusions: the first being that nondelinquent farms on the whole are more valuable and are apparently more productive; and the second, that the non-delinquent borrowers are more aware of the true value of their farms.

The distributions of variable X_9 : (interest rate of the loan) show the nondelinquent borrowers as a group are paying higher interest rates than are delinquent borrowers. This is the inverse of what was expected, but this does point out that the margin of delinquency or non-delinquency is greater than the few percentage points of difference in interest rates. There are the additional considerations in that the interest rates have gone up in the past year, and are also higher for large loans, both of which would give nondelinquent borrowers slightly higher rates. But, in general, it seems that interest rates, per se, are not factors in delinquency, at least in the short run.

Variable X_{10} : (borrower's place of residency) when considered with the actual distributions, finds relatively more nondelinquent borrowers living on their farms than delinquent borrowers. This would seem to indicate greater interest in the operation being shown by the nondelinquent borrowers and by borrowers who live on their farms so it might be a factor of delinquency.

The distributions of variable X_{11} : (unexpected expenses during the 1965-1966 production period) show relatively more delinquent borrowers had unexpected expenses. In light of variables X_4 : (the borrower's total income for the 1964-1965 production period) and X_5 : (does the borrower have a savings account) the lack of reserves in the face of unexpected expenses leaves the borrower in a position of choosing between covering the unexpected expenses or repaying his loan. More often than not, he will be expected to do the former since it is usually the most pressing at the time of decision. While this variable

is in the realm of uncertainty and cannot be easily foreseen, it is a factor which says something about reserve needs and managerial skills which are necessary for viable credit usage.

Variable X_{12} : (off-farm employment) shows relatively more delinquent borrowers have off-farm employment than nondelinquent borrowers. This raises a question since off-farm employment might be expected to add to a borrower's repayment capacity. However, it can also indicate that his farm is insufficiently productive to afford him a living and he is forced to take off-farm employment, or it might point out a basic lack of interest in the farming enterprise which would also be a limiting factor in repayment.

The basic difference noted between the distributions of Variable X_{13} : (estimated potential of unused land) is that relatively more delinquent borrowers had potentially productive land but lacked money to develop the land. A word of caution must be given in regards to this response. When variables X_8 and X_{30} , the appraisal by fieldmen and borrowers, respectively, are compared, the delinquent borrowers are less aware of the value of potential of farm and in more cases over estimated this value. Beyond this, there may be a lack of sufficient money to operate, but since the size of loans delinquent borrowers received are about the same as those by nondelinquent borrowers, it seems doubtful if lack is as important as misuse or inappropriate use of the credit.

The distributions of variable X_{14} : (other loans besides the BFAP loan) show relatively more delinquent borrowers have other loans

than do nondelinquent borrowers. This points out that there are more demands upon any revenues the delinquent borrowers may have, and reinforces a common finance belief that consolidation of creditors is a positive practice. For this reason this variable seems to be factor of delinquency and an indication of managerial skill.

Variables X_{15} : (use of veterinarian products or services) and X_{16} : (use of supplemental feeds) will be discussed together since the variables are closely related and their distributions are nearly the same. Actually, nearly equal percentages of delinquent borrowers and nondelinquent borrowers have animals. However, relatively more nondelinquent borrowers use veterinarian products and services and use supplemental feeds than do delinquent borrowers. These factors can serve as indices of innovativeness and level of technology of borrowers, as well as pointing out something of likelihood of return and expected repayment.

Variable X_{17} : (part of income goes to family) was expected to show negative correlation with repayment, due to revenue drain. But, in fact, the distributions show relatively more nondelinquent borrowers gave part of their income to other members of the family. It should not be assumed here that the nondelinquent borrowers are better family-men and in turn make better credit risks since there appears to be some interpretational problems as to what this question asked for, and what was given by the interviewed borrowers.

The distributions of X_{18} : (administer farm directly) show relatively more nondelinquent borrowers administer their farms directly

than do delinquent borrowers. The lower Chi-square value here along with considerations of the actual distributions must be considered with variables X_{10} and X_{12} . That is, if the borrower lives on the farm and whether or not he has off-farm employment. In light of the latter two variables, it seems evident that "considered" direct administration is less effective than "actual" direct administration in most cases. This variable appears to be a factor of delinquency.

The variables in Table 8 are ones which have Chi-square values falling within the significance range defined by 5 percent and 10 percent levels of significance. These variables show less significance of difference between the two distributions, delinquent and non-delinquent, than do those of Table 7. However, due to the nature of the problem, these variables may have a great deal of significance as secondary factors of delinquency.

In considering the distributions of variable X_{19} : (distance to major roads in kilometers) delinquent borrowers actually had shorter distances to major roads than did nondelinquent borrowers. However, the significance of the variable is lessened when variable X_{31} : (distance to major roads in hours) is considered. This latter variable shows that absolute distances have little relation to relative distances and, therefore, this variable can probably be discounted. There is one additional consideration, that being that non-delinquent borrowers have more latitude afforded by additional assets such as better transportation facilities. This latitude permits the nondelinquent group to exploit more distant areas and possibly more productive areas than the delinquent group can.

Table 8
 Variable- Showing Significance Between the
 5% and 10% Levels

Variable		Degrees of Freedom	Chi-Square Value
X ₁₉	Distance to major road (kilometers)	29	39.09994
X ₂₀	Primary source of information	8	14.97602
X ₂₁	Type of tenancy	88	14.60251
X ₂₂	Use of fertilizer and type	3	7.29716
X ₂₃	Adequacy of rainfall	2	6.68068

The distributions of variable X_{20} : (primary source of agricultural information) are very similar except for one factor. This factor shows relatively more nondelinquent borrowers use the extension service (SIPA) as their primary source of information. This might have two implications: first, that the extension service has the best information for specific areas and problems; second, that the nondelinquent borrowers are more aware or concerned and as a result, go to the extension service for assistance.

The distributions of variable X_{21} : (type of tenancy) show relatively more nondelinquent borrowers owning out-right and fewer renting than delinquent borrowers. This variable seems to point out that ownership has a positive relationship with repayment of credit. This follows since an owner would be expected to take greater interest in his farm, and has fewer demands upon his revenues.

The distributions of variable X_{22} : (use fertilizer and type used) show little difference between the groups as to use of fertilizer, but there is a significant difference as to type. Nondelinquent borrowers are more likely to use chemical fertilizers while delinquent borrowers are more likely to use natural or guano fertilizers. This variable might also be used as an index of innovation, technology, and managerial skill.

The distributions of variable X_{23} : (adequacy of rainfall) show that nondelinquent borrowers as a group have sufficient rainfall more often than do delinquent borrowers. This variable has some basic limitations since much of Peru has little or no rainfall and the agriculture

is dependent upon irrigation. But more delinquent borrowers show excessive rainfall as well as insufficient rainfall for their areas. This would seemingly point out that the delinquent groups are in the more marginal areas. Therefore, the variable probably has significance when considered with other variables such as irrigation and drainage, both of which are capital-demanding alternatives.

The variables in Table 9 are variables which have Chi-square values falling within the significance range defined by ten percent

Table 9
Variables Showing Significance Between the
10% and 20% Levels

Variable	Degree of Freedom	Chi-Square Value
X ₂₄ Amounts of other debts	8	13.26144
X ₂₅ Distance from BFAP (hours)	9	12.79622
X ₂₆ Objective of the loan	8	12.50112

and twenty percent levels of significance. The inclusion of these variables in a separate table is done for the same reasons that the variables of Table 8 were separated. These variables have sufficient significance to warrant additional consideration. Due to the fact that this paper is dealing with social, psychological, political, and other tangential areas to economics, consideration of factors beyond the usual mathematical limits seems in order.

The distribution of variable X_{24} : (amounts of other debts) shows that relatively more delinquent borrowers have other debts and on the whole larger debts than do nondelinquent borrowers. This factor seems to again point out the effect of external demands upon revenues and also the inverse effect of the increased magnitude of these demands.

Variable X_{25} : (the distance to the BFAP office in hours) was expected to have direct relationship with delinquency. That is, the farther or longer it takes to travel from the farm to the BFAP office the more likely that the borrower will be delinquent. This is not verified by the actual distributions and actually the reverse is often true. However, the difference is approaching the marginal level and might be disregarded at this time.

The distributions of variable X_{26} : (objective of the loan) show only limited significance of this variable as a factor of delinquency. However, in consideration of the BFAP's total portfolio more significance would be expected. Some of the lack of significance might be due to the method used in classifying the various objectives of loans. Because of this, the author feels that this variable needs further consideration and further analysis.

Delinquent Subset Analysis

The same technique of analysis which has been used to compare and contrast the two groups, delinquent and nondelinquent borrowers, has also been used to compare and contrast subsets of delinquent

borrowers only. Three subsets were established based on time of delinquency. The first subset (one day to three months) constitutes short term delinquency; the second subset (three months to one year) constitutes medium-term delinquency; and the third subset (more than one year) constitutes long term delinquency.

The analysis of these subsets of delinquent borrowers accents the findings of the delinquent versus the nondelinquent borrowers analysis. That is, the relationship between short term delinquents and long term delinquents is the same in every case as the relationship between nondelinquent borrowers and delinquent borrowers. The only difference is in degree. The variables which have been found to have a significant difference between subsets of delinquent borrowers are listed below in Table 10.

Rather than reiterate the findings of the delinquent versus the nondelinquent analysis, results of the two analyses are presented in Table 11. Percentage distributions of fifteen selected variables are shown for the nondelinquent borrowers, the total delinquent group, and two of the subsets of delinquent borrowers: long term delinquents and short term delinquents.

Two additional variables were noted in the subset analysis which has not been previously mentioned. The first is the geographic area of the borrower. This variable demonstrates one significant point, that a disproportionate number of the long term delinquents are in the Sierra. Relatively, 52 percent of the long term delinquents are in the Sierra region while only 22 percent of short term delinquents are in the Sierra.

Table 10

Variables with Significant Differences Among
the Subsets of Delinquent Borrowers

Variable	Degree of Freedom	Chi-Square Value
At Five Percent Level		
X ₄ : Total Income	40	74.13755
X ₆ : Climatic Problems	40	127.64691
X ₇ : Adequacy of Water	5	13.7221
X ₁₂ : Off-Farm Employment	5	26.74756
X ₂₀ : First source of Agri. Information	40	62.1154
X ₂₂ : Use and Type of Fertilizer Used	15	41.5384
X ₂₃ : Rainfall	10	46.80643
X ₂₆ : Objective of Loan	35	73.49950
At Ten Percent Level		
X ₁₄ : Other Credit	5	10.71401
X ₃₃ : How Title Acquired	40	52.6359
X ₃₇ : Years Working on Farm	35	46.31686
At Twenty Percent Level		
X ₂₄ : Other Debts	35	43.12699

Table 11

Percentage Distributions of Selected Factor Responses for
Nondelinquent, Delinquent, Short Term Delinquent and
Long Term Delinquent Borrower Groups

Variable and Response	Percentages by Groups			
	Non-delinquent	Delinquent	Short Term Delinquent	Long Term Delinquent
1. Borrowers Tenancy				
a. Own	66	63	67	54
b. Rent	28	31	23	26
2. Does the borrower live on his farm?				
a. Yes	72	60	66	56
3. Does the borrower administer his farm directly?				
a. Yes	95	92	97	90
4. How did the borrower acquire title to his farm?				
a. Bought it	57	52	50	23
b. Rents it	20	23	23	26
c. Inherited it	15	24	22	33
5. Adequacy of water				
a. Sufficient	54	37	65	38
6. Does the borrower use fertilizer and type?				
a. Yes	72	67	70	55
b. Chemical fertilizer	58	48	55	40
7. Primary source of agricultural information				
a. BFAP and/or SIPA	44	37	50	39
8. Did the borrower have unexpected expenses in 1965-66 production period?				
a. Yes	40	52	48	51

Table 11--Continued

Variable and Response	Percentages by Groups			
	Non-delinquent	Delinquent	Short Term Delinquent	Long Term Delinquent
9. Capital assets.				
a. Have a tractor	20	13	17	8
b. Have a truck	12	7	10	6
10. The borrowers total income for the 1965-66 production period.				
a. Over \$/25,000	82	76	74	59
12. Does the borrower have a savings account?				
a. Yes	29	12	13	11
13. Does the borrower have other debts and levels?				
a. Yes	20	29	17	25
b. Over \$/25,000	8	9	0	10
14. Is there adequate rainfall in the borrower's area for production?				
a. Yes	39	31	50	32
15. Does the borrower have climatic problems?				
a. Yes	63	74	71	78

The second variable is the BFAP fieldmen's opinion of the major reason for delinquency. A summary of their stated opinions is shown in Table 12.

Upon review of these responses it becomes evident that several of the reasons stated are closely related and might be grouped into three major categories: production problems, management problems, and general external problems. These groupings would be:

- A. Production Problems (Total: 60.3%)(Short - 50.7%)(Long-71.0%)
 - 1. poor crop
 - 2. lack of water
 - 3. climatic problems
 - 4. diseases,
 - 5. lack of labor
 - 6. poor land.
- B. Management Problems (Total: 16.2%)(Short - 4.7%)(Long - 21%)
 - 1. poor management
 - 2. other debts
- C. General External Problems: (Total: 21.9%) (Short - 43.9%) (Long - 8.2%)
 - 1. crop not sold
 - 2. sickness in the family
 - 3. low prices
 - 4. death of the borrower

Any attempt to assign the above noted reasons for delinquency to classes is quite subjective. An example is the assignment of Climatic Problems and Disease Problems to the class, Production Problems. These could very well be management problem effects, that is, failure to apply pesticides or use of other techniques which are in the realm of management. This subjectivity is increased by the

Table 12

BFAP Fieldmen's Opinions as to Why Borrowers
Did Not Repay Loans

Opinion	Number			Percentage of Each Group		
	Total Group	Short Term Group	Long Term Group	Total Deliquent Group	Short Term Group	Long Term Group
Poor Crop	61	19	22	18.3	23	16
Poor Management	50	3	29	15.0	3.5	21
Lack of Water	46	10	17	13.8	13	13
Crop not Sold	38	30	0	11.4	36.6	0
Climatic Problems (dought, frost, wind, and hail)	55	6	38	16.5	7.3	228
Diseases	30	3	15	9.0	3.7	11
a) crop	(21)	(2)	(12)	(6.3)	(2.4)	(8.9)
b) animal	(9)	(1)	(3)	(2.8)	(1.2)	(2.2)
Sickness in the Family	17	2	8	5.1	2.4	6
Low Prices	14	4	3	4.2	4.9	2.2
Lack of Labor	6	3	2	1.8	3.7	1.5
Other Debts	4	1	0	1.2	1.2	0
Death of Borrower	4	1	1	1.2	1.2	.7

Table 12--Continued

Opinion	Number			Percentage of Each Group		
	Total Group	Short Term Group	Long Term Group	Total Deliquent Group	Short Term Group	Long Term Group
Poor Land	3	0	2	.9	0	1.5
No Response	8	0	0	2.4	0	0

fact that the answers that the fieldmen gave are subjective. Regardless, these groupings can assist in pointing out the more relevant factors of delinquency when considered with the other findings.

Factor Sources

The identification of delinquency factors found in the study of borrowers in Peru has now been completed. The remaining question is what is the source of each of these factors. Each of the factors which has been found to be significant above will now be assigned to one of the major sources previously listed as: the borrower, the lending institution, or the general environment. Some factors will be found to fall into more than one source category, but the reasons are different and so they will be dealt with separately in each source.

The preceding study was of the borrowers of agricultural credit and at this point the majority of factors seem to be from the borrower source. The factors which are identified with the borrower source are:

1. the number of BFAP loans in the past years,
2. total income,
3. savings account,
4. farm appraisal (comparison of fieldmen's appraisals with borrowers' appraisals),
5. borrower's place of residency,
6. occurrence of unexpected expenses in the 1965-1966 production period,
7. off-farm employment
8. other credit,

9. use supplemental feeds,
10. use veterinary products,
11. administer farm directly,
12. prime source of agricultural information,
13. type of tenancy,
14. use of fertilizer and type,
15. other debts and amounts,
16. the objective of the loan,
17. irrigation,
18. acquisition of title,
19. sickness in the family, and
20. death of the borrower.

The factors which seem to be identified with source two--the lending institution are:

1. year the loan was granted,
2. objective of loan,
3. farm appraisal,
4. duration of loan in time, and
5. mismanagement of loan by borrower.

While the number of factors identified with the lending institution are limited at this point, they are prime indicators which will be used in the later analysis of factors arising from the lending institution.

The factors which are identified with source three, the general environment, are:

1. climatic problems,
2. adequacy of water,
3. unexpected expenses,
4. prime source of agricultural information,
5. type of tenancy,
6. rainfall,
7. distance to road,
8. use of fertilizer and type used,
9. marketing problems (crop not sold),
10. low prices,
11. lack of labor, and
12. geography.

At this point the factors of delinquency which the borrower study show as significant have been identified and assigned to one of the general sources. The interaction of these factors plus the factors the author noted beyond the scope of the borrower study will be presented in the next three chapters.

CHAPTER IV

THE BORROWER: THE FIRST SOURCE OF FACTORS AFFECTING DELINQUENCY OF AGRICULTURAL CREDIT

The borrower is the pivotal point for the success or failure of most agricultural loans. While the borrower may be the victim of many external forces or limitations, his operation within these parameters and in the absence of insurmountable odds dictates the degree of credit success. Since the "man" factor is a major determinant of credit success, it follows that it is also a major determinant of credit delinquency.

The previous chapter points out many factors of delinquency which seem to be associated with the borrower. These factors indicate three general problem areas: the borrower's resource package, the borrower's managerial ability, and the borrower's attitudes toward credit. There are several factors which overlap into more than one of these general areas, and the general areas also overlap somewhat, but these three are sufficiently unique and important to warrant separate consideration.

There is one further group of factors which has its source with the borrower, but is beyond his control. This will be briefly presented after the discussion of the above three general problem areas.

The Borrower's Resource Package

The factors which were found in Chapter III to be somewhat significant to delinquency and which relate to the borrower's resource package are:

1. The farm value (considering the farm appraisals by the borrower and the BFAP fieldman).
2. Total income for the 1964-1965 production period.
3. Type of tenancy.
4. Location of farm in the three geographic areas of Peru.

Two other factors which were not found to be significant with the tests used, but did show some differences between delinquent and nondelinquent borrowers and which further point out resource package problems are:

1. Level of capital assets and power source.
2. Borrower ownership of a truck.

The basic value of the average delinquent borrower's farm tends to be slightly less than does the farm of the nondelinquent borrower. This difference is very slight when the borrower(s) appraisals are considered; however, assuming that the BFAP fieldmen made somewhat more objective appraisals this difference becomes more significant. The nondelinquent borrowers also tend to have a higher capital asset level and proportionately more own trucks than do delinquent borrowers.

More nondelinquent borrowers own their farms while more delinquent borrowers rent. Renting lessens a borrower's ability to service a loan because of the additional commitment of rent payments.

It is also noted that more delinquent borrowers are found in the Sierra where the productivity is lower than the Costa, as well as having fewer enterprise alternatives, especially for cash type enterprises.

This lower value farm, division of returns due to rent, lower level of capital assets, and lower productivity are all reflected in the borrower's income level which also shows the delinquent borrowers, in general, have lower incomes. Since the difference in income is found to be much more significant than is the difference in loan amounts for the two groups, delinquents and nondelinquents, income seems to be an important factor of delinquency. Income has been found to be a function of the resource package components, so the resource package is a factor of delinquency.

This conclusion must be qualified because the overlap of the delinquent and nondelinquent groups for each of the above component factors is substantial. Therefore, the resource package is only the base of the borrower's operation, although a good resource package will afford a better chance of success and lessen the likelihood of delinquency in the use of credit.

The Borrower's Managerial Ability

The borrower's managerial ability dictates to a high degree what a given borrower will be able to accomplish with a given resource package. There are several factors which were found to be significant in Chapter III which seem to be indicators of managerial ability. They are:

1. number of BFAP loans in the past three years;

2. savings account,
3. value of the farm (comparing appraisals of fieldmen with borrowers);
4. borrowers place of residency;
5. unexpected expenses in the 1965-66 production period;
6. off-farm employment;
7. other credit and the amount of other debts;
8. use of veterinary products and of supplemental feeds;
9. administer farm directly;
10. primary source of agricultural information;
11. type of tenancy and title acquisition;
12. use of fertilizer and type used;
13. objective of the loan;
14. irrigation, and
15. the borrower's educational level.

Proportionately more nondelinquent borrowers use fertilizer and more use chemical or commercial fertilizers than do delinquent borrowers. More nondelinquents use veterinary products and supplemental feeds in livestock operations than do delinquent borrowers. The one indicator which seems to be alien to the general trend is the use of pesticides. Here proportionately more delinquent borrowers use pesticides than do the nondelinquent borrowers. The reason for this is not clear from the study since pesticide types, use, and amounts were not noted. Nor is it clear what need of pesticides there is in

the different areas of Peru. At this point the question of pesticides can only be noted but interpretation must await further study.

Proportionately more nondelinquent borrowers have tractors and own trucks than do delinquent borrowers. In regard to irrigation, proportionately more delinquent borrowers have some access to an irrigation system, but in spite of this, proportionately more delinquent borrowers lack adequate water regardless of the irrigation. This indicates that the systems are marginal or not properly used to derive the benefits of irrigation.

The actual management of the farm found relatively more nondelinquents are living on their farms than are delinquent borrowers. While both groups are about equal proportionately as to the question of direct administration, it points out that "felt" direct administration is less effective than actual direct administration.

The question of off-farm employment follows the point of on-farm living and direct administration. The analysis of the study shows that proportionately more delinquent farmers have off-farm employment. This can lead to several interpretations. One is that the farm is not sufficiently productive to support the borrower and his family. This follows the resource package analysis. Also, it can indicate that the borrower is preoccupied with an off-farm job and can only give secondary attention to the farm. This closely follows the common belief about absentee ownership arrangements in Latin America.

The educational level of the delinquent borrowers is, on the average, higher than is the nondelinquent borrowers educational level. This is the reverse of the author's expectations since education is a fairly reliable indicator of managerial ability. However, when the off-farm employed group was removed from the delinquent borrower sample, the remaining delinquent borrowers were found to have a slightly lower educational level than the nondelinquent group. This fortifies the belief that the off-farm employed group can only give secondary attention to their farms.

The delinquent borrowers seem to have less awareness of their farms and their potential. Not only do relatively fewer live on their farms and relatively more have off-farm interests, but in comparing the delinquent borrowers' farm appraisals with the BFAP fieldmen's appraisals of their farms, the delinquent borrowers tend to overestimate their farms value more often and to a larger degree than do nondelinquent borrowers. They also feel their farms have a greater unused potential. This is a possibility, but knowledge of their overestimation of farm value would indicate a high likelihood of overestimation of unused potential as well.

On the matter of method of acquisition of farm, proportionately more delinquent borrowers inherited their farms or rent them, while more nondelinquent borrowers have bought their farms. The inheritance method of acquisition coupled with off-farm employment and seemingly lower awareness of farm value indicates again, less interest and less agricultural orientation of delinquent borrowers.

The number of loans the borrower has had in the past three years would seem to indicate the borrower's credit knowledge and experience. While delinquent borrowers have had significantly fewer loans, on the average, this consideration is biased by the fact that the BFAP does not, as a rule, give new loans to delinquent borrowers. Regardless of this, when the objectives of delinquent loans are considered, credit experience and agricultural experience seem to be lower for delinquent borrowers. An AID assistant pointed out that many of the Sierra farmers continue to try various crop enterprises with only a one-in-four or five chance of success. This problem can only be partially laid at the feet of the borrowers since the BFAP should not grant loans for enterprises which cannot be expected to pay off. It does add further to the belief that the delinquent borrowers have less realized managerial and technical ability.

There are two prime agricultural information sources in Peru at this time, the extension service (SIPA) and the BFAP. The study shows that relatively more nondelinquent borrowers use these two sources than do delinquent borrowers. This indicates either a lack of interest on the part of delinquent borrowers for better information, or less awareness of the value of this information. Either way the delinquent borrowers again appear to have less managerial ability in regard to agriculture and the use of agricultural credit.

The three remaining indicators are, whether or not the borrowers has a savings account, if he had any unexpected expenses during the 1965-1966 production period and if he has other debts and the amounts

of these debts. The question of unexpected expenses need not be a managerial problem unless the expense was the result of a management mistake or oversight, such as forgetting to irrigate or to apply fertilizer. However, the study shows significantly more delinquent borrowers had unexpected expenses and it seems likely that some of these are the result of management shortcomings.

The study shows relatively more nondelinquent borrowers have savings accounts than do delinquent borrowers. A savings account or some cash reserve is a method of guarding against unexpected expenses. The fact that relatively fewer delinquent borrowers have savings accounts demonstrates that the delinquent borrowers have shown less foresight in guarding against unexpected expenses; hence less managerial ability.

Relatively more delinquent borrowers have other sources of credit and have larger external debts. This indicates in some cases over extension of their resources in the assumption of these external debts and thus less managerial ability.

As with the resource package interpretation, the managerial ability factor distributions for the delinquent and nondelinquent borrower groups show considerable overlap. Each of these factors can be used as indicators, but still no clear cut definition between delinquent and nondelinquent borrowers can be shown.

The Borrowers' Attitudes

In analyzing the data for delinquent borrowers it was noted that in many cases the borrower had sufficient income to repay his loan

but did not. This indicates that some factor group beyond resource package and managerial ability is present. This factor group is called the borrowers' attitudes in this thesis. Because of the extremely subjective nature of "attitudes" only a few empirical facts can be called on for support and even these are only dim indicators of the borrowers' attitudes toward agricultural credit. These indicators are:

1. borrower's place of residency;
2. off-farm employment; and
3. method of title acquisition.

A general psychological trait that has been noted by other researchers in Peru and Latin America could also be at the root of this problem. This trait is described by Simmons as comachado, and he noted it in the mestizo culture of Peru.³⁵

In considering this group of delinquent borrowers, who had sufficient income to repay but did not, nearly all were found to have off-farm employment and almost all had inherited their farms. This indicates that they are not dependent upon their farms for their livelihood and many had acquired them without necessarily having personal interest in agriculture. Nor did this group, in general, live on their farms.

³⁵Simmons, O. G., "The Criollo Outlook in the Mestizo Culture of Coastal Peru," Contemporary Cultures and Societies of Latin America, ed. by D. B. Heath and R. N. Adams, New York, Random House, 1965.

The concept of comechado which Simmons described can be literally translated as "eating lying down." That is, a comechado is someone who is parasitic or extractive and enjoys the benefits of something such as a farm but prefers not to be involved with the work or responsibilities of it. The group that Simmons describes as comechados seems very similar to the group of chronic delinquents who have not repaid their loans even though they could have.

While this is a very subjective and delicate subject it could be a problem affecting agricultural credit. This might become a very serious problem for the BFAP if borrowers, in general, started to view the government sponsored BFAP as a giver of gifts rather than as an extender of credit.

The group of factors which arise at the borrower level over which the borrower has no control is the one group that has not been noted. These include such things as the death of the borrower, or a family member, sickness of the borrower or within the family, and unexpected expenses which the borrower cannot guard against. These cannot be foreseen or avoided and, therefore, cannot be eliminated as causes of delinquency so they will not be pursued further.

Delinquent borrowers as a group have smaller, less valuable, and less productive resource packages. Delinquent borrowers as a group also seem to be less adept at managing their resources and in using agricultural credit. In addition, at least a part of the delinquent borrowers have attitudes which are alien to credit usage.

However, in most part these differences are not so great that a clear line of demarcation can be made between all delinquent and non-delinquent borrowers; therefore, other factors must be interacting to cause the resulting delinquency.

CHAPTER V

THE LENDING INSTITUTION: THE SECOND SOURCE OF FACTORS AFFECTING DELINQUENCY OF AGRICULTURAL CREDIT

Credit Institutions in General

Credit institutions are initiated for various reasons. Some of the more prevalent of these reasons are profit, economic development and social development. Almost any combinations of these objectives is feasible within a single credit institution. The point is that the resource needs--financial, physical, and personnel--and the operational procedures are dependent upon the institution's objectives. Likewise, the types of borrowers to whom a credit institution would lend would depend upon its objectives.

A credit institution whose only motive is profit would be expected to only lend to proven borrowers or to borrowers who can furnish proof that they will be able to repay both the principle and the interest of their loans. In this case very little loan supervision is necessary and the costs of loan servicing are low as are physical and personnel needs.

When economic development is the objective, the borrowers are often of a higher risk category, as are the enterprises to be financed. This demands more supervision to assure success and future repayment and this in turn demands more resources of all types.

When social development is added to economic development, as is the case in most developing countries, the borrowers and enterprises are even more marginal. This increases the resource needs even more and brings about costs which are not economic costs, but social costs.

The development of a credit institution as to resource needs, staffing, and operational procedures must consider the objectives of the institution in light of the environmental situation. Likewise, any evaluation of such an institution must also be made in the same light.

The Banco de Fomento Agropecuario del Peru

The Banco de Fomento Agropecuario del Peru, (BFAP),³⁶ was founded in 1931 and was designed to be the agricultural bank for Peru, however, until the 1950's it was little more than a name. The BFAP is an autonomous agency of the Peruvian Government. It receives its funding from the governmental budget, as well as the normal money markets with governmental guarantee of the open market transactions.

The BFAP provides most of the usual banking services. However, its major concern is to assist agricultural development by providing credit to farmers. It also has social objectives which are demonstrated by its attempts to provide this credit at reasonable rates to small and medium size farmers who have limited alternative sources of credit. This is explicitly pointed out by the following schedule

³⁶"BFAP" will be used to designate "Banco de Fomento Agropecuario del Peru" in all subsequent discussion in this thesis.

of interest rates which are contemporary to the data quoted in this chapter. There have been some slight modifications the past year but the basic structure has remained the same.

Table 13
Interest Schedule of the BFAP

Type of Borrower	Amount in Soles	Interest Rate (per cent)
Small Farmer	10- 10,000	7% per year
Small Farmer	10,000- 50,000	8% per year
Small Farmer	50,000-100,000	9% per year
Medium Farmer	100,000-200,000	11% per year
Medium Farmer	200,000-500,000	12% per year
Large Farmer	500,000 and up	13% per year

Source: Ramon Remolina, Banco de Fomento Agropecuario del Peru, Circular dated 4 de Noviembre de 1963, Lima, Peru.

In practice, the amount of the loan determines the type classification of borrower and the resulting interest rate. In actuality, over 90 percent of the loans made in 1963 by the BFAP were under S/100,000 and classified as small farmer loans or at least extended at the corresponding interest rates.³⁷

³⁷Ramon Remolina, Banco de Fomento Agropecuario del Peru, Circular, dated, Lima, 4 de Noviembre de 1963.

This fact has additional significance with the realization that it costs the BFAP, on the average, about 6 1/2 to 7 percent of the loan value to administer and service a loan.³⁸ This leaves the BFAP a very narrow operating margin between costs and returns on most loans even without inflation or delinquency.

The BFAP loans are classified either long or short term by duration of the loan. Long term loans are generally between one and seven years but do go up to ten years in some cases. Short term loans are those which have a duration of less than one year. These two general classifications are further broken down by the following classes.

A. Short term

1. crop exploitation, (R), or regular farmer,
2. crop exploitation, (S), or small farmer,
3. livestock exploitation (R),
4. livestock exploitation (S)
5. storage,
6. rubber exploitation,
7. forestry,
8. unsecured and unspecified, and
9. colonization.

B. Long term

1. crop exploitation (R),
2. crop exploitation (S),

³⁸US/AID-Peru, AID Loan to SIPA, Justification. (unclassified)
Lima, Peru, 1966.

3. livestock exploitation (R),
4. livestock exploitation (S),
5. movable capital assets (R),
6. movable capital assets (S),
7. fixed capital assets (R),
8. fixed capital assets (S),
9. rubber exploitation, and
10. unsecured, unspecified.

Long term loans are also reclassified from the above list of 10 as to:

1. irrigation,
2. land improvement,
3. equipment,
4. livestock and fences,
5. perennial crops
6. processing plants, and
7. miscellaneous.

The BFAP has shown remarkable growth in the number and amounts of loans to farmers over the past ten years. From March 1956 to March 1966, the amount of loans outstanding increased from about S/650 million to over S/2,600 million for a 300 percent increase.³⁹ An even more dramatic increase occurred in the amount of loans outstanding to small farmers. This amount changed from S/65 million in

³⁹ Banco de Fomento Agropecuario del Peru, Memoria, 33 Ejercicio 1963-1964, Lima, Peru, 1965, Anexo 7.

1955 to S/420 million in 1964 for about a 545 percent increase.⁴⁰ However, these increases must be deflated somewhat since they are measured in current soles.

This growth has occurred as a result of the Peruvian government's increasing concern for economic development and for the welfare of the rural population. The growth of funds has been possible because of Peru's extremely good record in servicing international loans and her substantial hard-currency reserves which have enabled the BFAP to receive loans from the Inter-American Development Bank and other international organizations. It has also been achieved by the development of a comprehensive system of 99 BFAP offices throughout the country.

Beyond being the major formal lender in the agricultural sector of Peru, the BFAP also handles the monetary and collection ends of the extension service's (SIPA) supervised credit program on the Costa and the agrarian reform's (ONRA) credit program through a special BFAP program known as "Fondo en Fideicomiso."

The BFAP has been confronted with substantial problems of delinquency and resulting fund shrinkage. These will be pointed out further in the following discussion and tables. The data that will be presented are the result of extensive studies of the BFAP's consolidated loan portfolios and other records.

⁴⁰ Ibid., Anexo 8.

The Condition of BFAP Loan Portfolio

The BFAP separates delinquent loans into two classifications, mora and vencido. Mora is the term used to denote delinquent payments of long term loans which have not reached their termination date, and only refers to that portion of the loan that is delinquent. Vencido is used to denote long and short term loans which have reached or passed their termination date, and represents the amount outstanding on the matured loan. This paper will combine these two classifications into the term delinquent, except when the discussion deals with one or the other explicitly, in which case the terms mora or vencido shall be used as defined above.

As has already been noted, the total loan portfolio of BFAP has grown rapidly over the past few years. This growth is shown in Figure 6 which shows the portfolio size as of September 30 of the years 1961 through 1965. The September 30 portfolio is normally the smallest BFAP portfolio reporting of the year since it comes after the harvest period for most crops and prior to the beginning of the next production period. Therefore, most loans have matured and been retired, while new loans have not yet been taken out.

While the amount of the BFAP loan portfolio increased over these five years, it should also be noted that the delinquency level also increased from 1961 through 1964 (Figure 7). However, in 1965 there was a dramatic drop in the delinquency level. This drop, to a large extent, is due to the declaring of several regions of Peru as disaster

Figure 6: Amount in Sales of BFAP's Portfolio.*

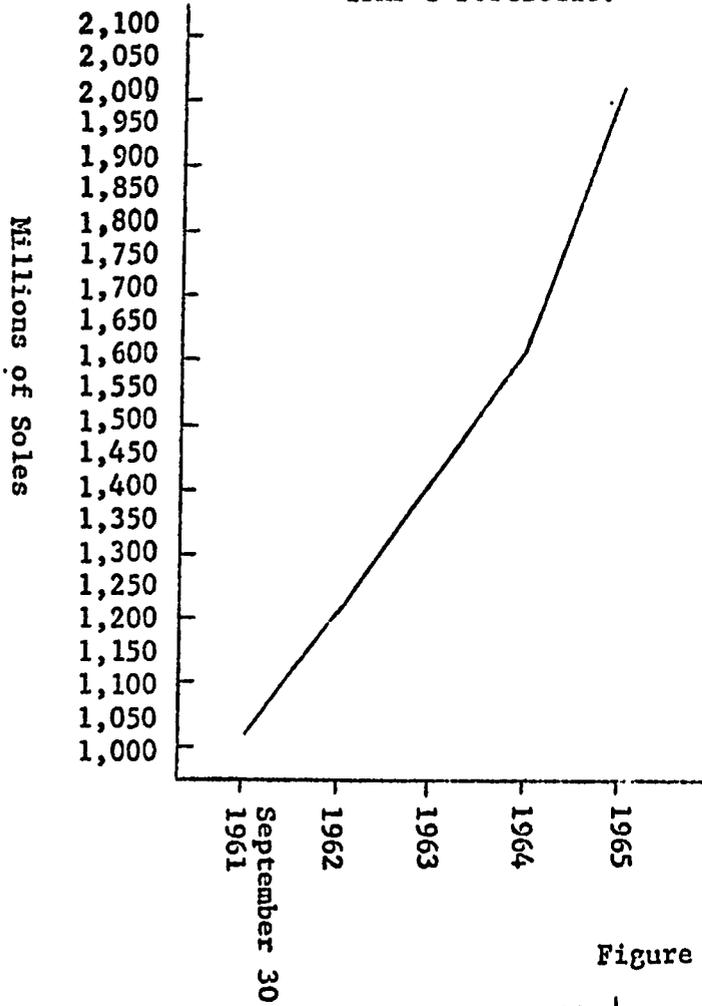
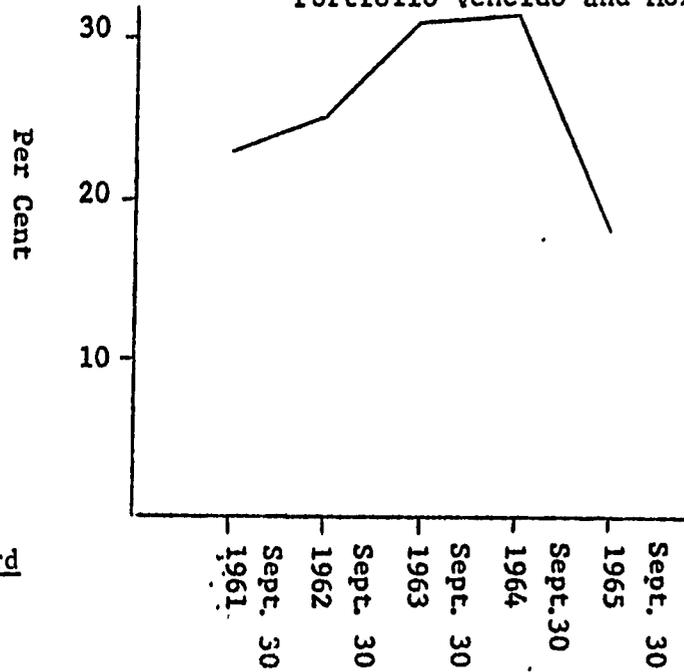


Figure 7: Per cent of total BFAP Portfolio Vencido and Mora.**



*,** Sources: BFAP, Memoria, 33rd edition, 1965.

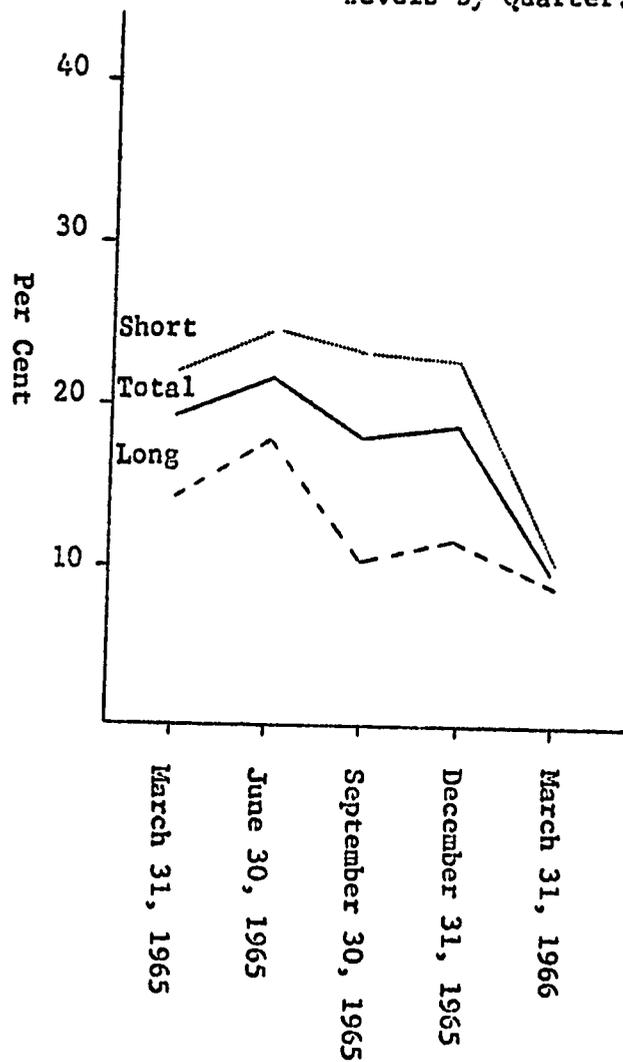
areas and to the granting of a grace period to farmers in the disaster areas. This resulted in the loans being removed from the delinquency record. This occurred in late 1964 and as a result, the delinquency levels were fairly stable in 1965, but in early 1966 the delinquency rates fell again due to the same reasons given previously. This can be seen in Figure 8.

The increase in delinquency occurred primarily in the short term production type loans. BFAP officials blamed much of the increase on small farmers who were first-time borrowers and unaware of how to use credit. This is verified to a certain extent in Table 14 which shows the percentage of delinquency by type of loan and type of farmer for September 30, 1965.

There is a great deal of difference between the levels of delinquency for different credit uses, and between long and short term credit. For instance, as shown in Table 14, short term rubber exploitation loans were 34.6 percent delinquent while short term crop exploitation loans were 15.5 percent delinquent, and the short term unsecured-unspecified loans had no delinquency. On the other hand, long term loans, as a group, had 10.2 percent delinquency while short term loans had 23 percent delinquency.

Some of the difference between long and short term loans might be explained by the fact that very few long term loans were made to small farmers. Likewise, the unsecured-unspecified loans were only given to proven borrowers, while the high delinquency of rubber loans

Figure 8: BFAP Delinquency
levels by Quarter.*



*Source: BFAP Quarterly Loan Portfolio Reports.

Consolidated BFAP Loan Portfolio by Term and Objective of Loan,
September 30, 1966

Classification of Credit Per Use, Type	Vencido				Mora			Sum V&M		
	% of Total Number	% of Total Amount	% < 90 Days		% of Total Amount	% < 90 Days		% of Total Amount	% of Amount > 90 Days	
			%	%		%	%			
SHORT	Crop (R)	19.8	15.5	58.3	41.2	0	0	0	15.5	6.4
	Crop (S)	48.7	52	52.5	47.5	0	0	0	52	24.7
	Livestock (R)	28.2	23.9	18.1	82	0	0	0	23.9	19.6
	Livestock (S)	30.5	29.9	30.3	69.7	0	0	0	29.9	20.9
	Storage	11.8	6.5	62.5	37.5	0	0	0	6.5	2.4
	Rubber	50	34.6	2.5	97.5	0	0	0	34.6	33.7
	Forestry	33.3	21.4	0	100	0	0	0	21.4	21.4
	Unsecured, Unspecified	0	0	0	0	0	0	0	0	0
	Colonization	--	--	--	--	--	--	--	--	--
LONG	Crop (R)	7.7	5.3	12.4	87.6	3.5	47.7	52.3	8.8	6.5
	Crop (S)	9.5	6.5	25.9	74.1	3.9	40.3	59.7	10.4	7.1
	Livestock (R)	6.8	3.5	20	80	4	29	71	7.5	5.6
	Livestock (S)	10.6	4.9	16.7	83.3	6.2	20.6	79.4	10.1	8.2
	Moveable Assets (R)	10	6.5	20.6	79.4	5.3	59.2	40.8	11.8	7.3
	Moveable Assets (S)	30.5	16.2	10.9	89.2	5.7	35.4	64.6	21.9	18.1
	Fixed Assets (R)	8.4	7.7	19.2	80.8	6.4	30.4	69.6	14	10.6
	Fixed Assets (S)	5.6	.3	0	100	.68	81.5	18.5	1	.4
	Rubber	52.9	71.8	.2	99.8	7.3	1.1	99	79.1	78.9
Unsecured, Unspecified	0	0	0	0	0	0	0	0	0	
LONG	Irrigation	17.1	7.8	32	68	5.6	37.4	62.6	13.3	8.8
	Land Improvement	16.8	10.4	6.3	93.7	4.1	37.1	62.9	14.5	12.3
	Equipment	12	6.3	12.6	87.4	5	59.6	40.4	11.3	7.5
	Livestock and Fences	8.9	3.8	19.2	80.8	4.1	26.8	73.2	8	6.1
	Perennial Crops	9.8	6	14.7	85.3	3.7	44.3	55.7	9.7	7.2
	Processing Plants	10.5	5.1	45.9	54.1	14.9	17.5	82.5	20	15
	Miscellaneous	17.9	2.2	65.2	34.8	5.6	56.3	43.7	7.8	3.2
TOTALS	Total Short	40.9	23	51.3	48.7	0	0	0	23	11.2
	Total Long	10.5	5.7	17.5	82.6	4.5	38.2	61.8	10.2	7.5
	Total of Short & Long	34.6	16.3	46.7	53.3	1.8	38.2	61.8	18	9.8

might be explained by the location of the loans, in the Selva area, and by the changing market picture.

The geographic distribution of the BFAP loans as well as the incidence of delinquency is partially shown by the portfolio data. The actual distribution in 1964 of the BFAP's loans was 80.7 percent on the Costa, 10.2 percent in the Sierra, and 9.1 percent in the Selva.⁴¹ Beyond this geographic breakdown the division of funds and loans among the branches are not equal. This can be seen in Table 15. Column two lists the respective percentages of the long term and short term portfolios of the BFAP by amount found in the respective branches. The rest of the table deals with the levels of delinquency that occur in each of the individual branch's portfolio by the long and the short term breakdown.

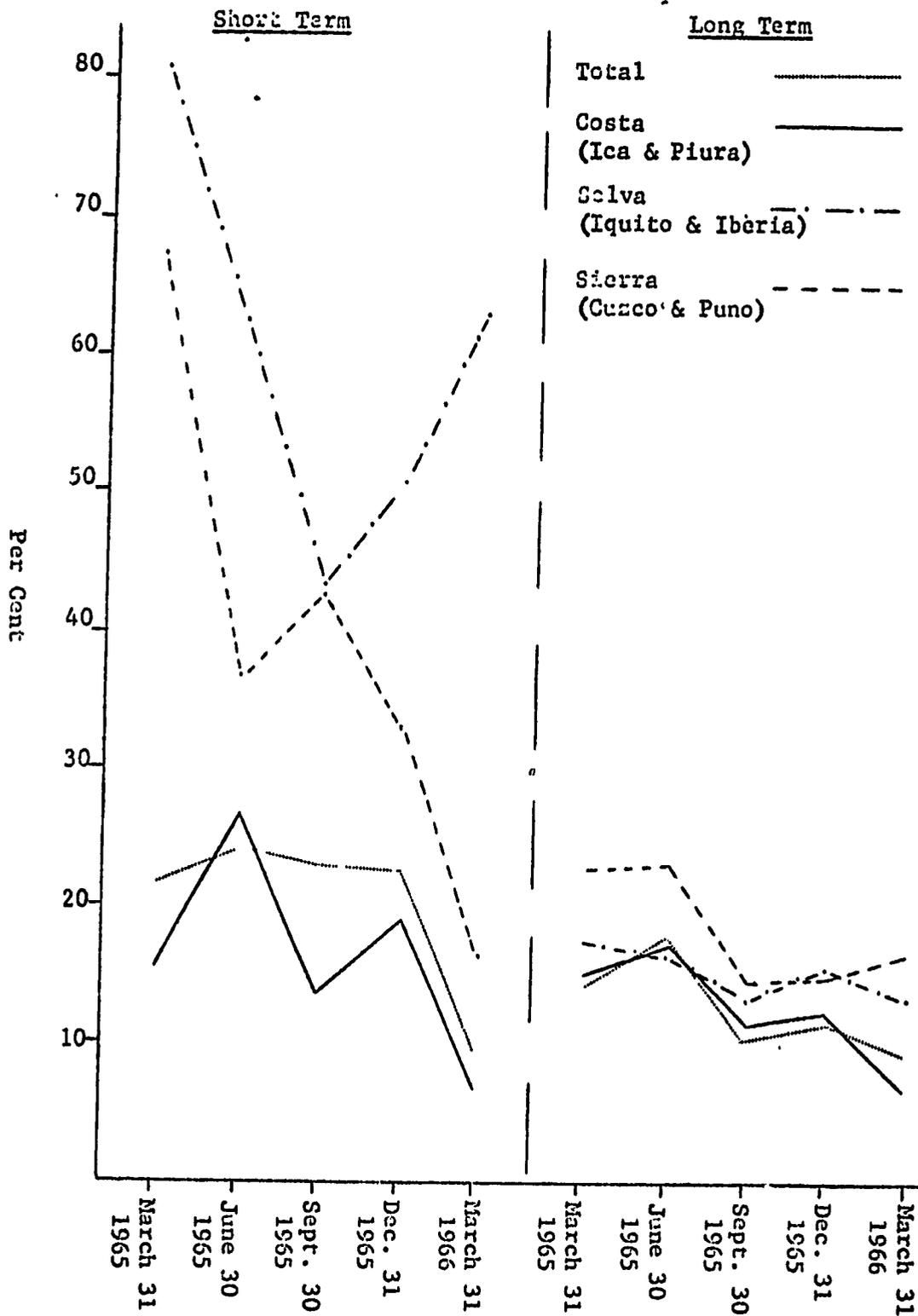
While the distribution of loans is extremely distinct by regions, in most cases the branches which administer these loans are not found in a single region but often cross all three regions. Of the eleven branches and Iberia listed in Table 15 only Piura and Ica can be considered as basically Costa, Puno and Cuzco as basically Sierra, and Iquitos and Iberia as basically Selva in jurisdiction. The other six have at least two of the regions within their jurisdiction, and often all three of the regions.

In Figure 9 it can be seen that the levels of delinquency are seemingly functions of the geographic regions. However, while these selected branches are fairly homogeneous as to region, it must be

⁴¹Ibid., Anexo 14.

BFAP Loan Portfolio by Term and Branch, September 30, 1966												
Term	Sucursales	Percent of Total BFAP Portfolio	Percent of BFAP Portfolio by Term	Vencido			Mora			Sum Ven. & Mora		
				% of Total N ^o	% of Total Amt	% 90 days	% 90 days	% of Total Amt	% 90 days	% 90 days	% of Total Amt	% of Total Amt 90 days
Short	Arequipa	6.4	5.1	37.6	30.9	29.9	70.1	0	0	0	30.9	21.7
	Cajamarca	1.7	.9	1.0	7.2	0	100	0	0	0	7.2	7.2
	Chiclayo	8.2	8.6	61.9	52.0	74.3	25.7	0	0	0	52.0	
	Cuzco	3.4	3.5	44.8	51.9	35.0	15.0	0	0	0	51.9	7.8
	Huancayo	10.6	5.8	36.2	51.0	0.3	9.7	0	0	0	51.0	4.9
	Iberia	.03	.03	19.1	13.5	10.2	89.8	0	0	0	13.5	12.2
	Ica	19.6	25.6	41.7	23.7	24.5	75.5	0	0	0	23.2	17.5
	Iquitos	1.3	1.4	66.2	43.9	1.6	98.4	0.0	0.0	0.0	43.7	43.0
	Lima	24.4	19.2	47.8	15.5	23.3	71.7	0.0	0.0	0.0	15.5	11.1
	Piura	16.5	21.9	21.6	3.5	31.5	48.5	0.0	0.0	0.0	3.2	1.5
	Puno	2.9	1.9	23.8	27.0	3.4	83.1	0.0	0.0	0.0	28.8	23.1
	Trujillo	4.8	5.4	46.8	22.0	24.0	16.0	0.0	0.0	0.0	22.6	3.6
Long	Arequipa		7.5	5.5	2.5	11.8	83.2	5.9	23.9	76.2	8.3	6.6
	Cajamarca		3.0	4.7	6.5	12.2	87.8	0.4	33.7	66.3	6.8	5.9
	Chiclayo		7.7	14.9	9.8	29.9	70.1	8.7	43.0	57.0	18.4	11.8
	Cuzco		3.4	14.6	7.0	19.2	80.8	12.8	51.0	49.0	20.4	13.6
	Huancayo		18.2	3.7	1.0	71.8	28.2	2.1	68.5	31.5	3.9	1.2
	Iberia		.04	0	0	0	0	0.6	0	100	0.8	0.8
	Ica		10.2	18.6	17.7	17.4	82.6	7.9	39.1	60.9	19.7	15.5
	Iquitos		1.1	22.8	9.2	0.8	99.5	4.8	23.7	76.3	13.9	12.7
	Lima		32.6	16.8	7.2	3.3	96.7	3.7	30.9	69.1	10.9	9.5
	Piura		7.8	1.5	0.3	1.6	82.4	0.4	3.8	96.2	0.7	0.6
	Puno		4.4	5.7	3.1	5.5	96.5	7.3	7.0	93.1	10.4	9.8
	Trujillo		4.0	5.8	4.0	2.8	97.3	4.5	74.5	25.5	3.5	5.0
Totals	Total Short		100	40.9	23.0	51.3	48.7	0.0	0.0	0.0	23.0	11.2
	Total Long		100	10.5	5.7	17.5	82.6	4.5	38.2	61.8	10.2	7.5
	Total Long and Short	100	100	34.6	16.3	46.7	53.3	1.8	36.2	61.8	18.0	9.8

Figure 9: BFAP Delinquency Levels by Region using selected Branches*



*Source: BFAP Quarterly Loan Portfolio Reports, Volume I,II,III,IV, 1965; Volume I, 1966.

remembered that all of the others, except Huancayo, are basically Costa from the point of view of their activities.

The BFAP's total level of delinquency follows the "Costa" level much more closely than it does the other two regions. This is to be expected because of the high percentage of BFAP loans in this region. It is also evident that the Costa generally shows a much lower delinquency level, relatively, than does either the Sierra or Selva. The third point that this figure brings out is the greater variance of delinquency in short term loans than in long term loans. This would be expected since the long term loans should not be as dependent on short run factors that influence credit usage.

This macro-picture of the incidence and magnitude of delinquency serves to point out the seriousness of the problem to lenders in Peru. As was noted earlier, the BFAP operates on a fairly narrow cost-return margin and with delinquency levels as noted here it would not take long to completely deplete a given fund. For this reason the government has been forced to replace part of the BFAP's fund each year, which in effect cuts the impact that could be achieved with the injection of funds if they were supplemental funds instead of being partially replacement funds.

The question becomes one of establishing the identity of the negative factors involved in this wastage of resources. Beyond this identification, to move then toward the elimination or counteraction of these negative factors. Consideration of possible alternatives

for elimination of the negative factors will be presented in the conclusions and recommendations.

Factors Affecting Delinquency of Agricultural Credit Arising from the BFAP

The factors which were found to be significant to the problem of delinquency in the analysis of the borrower study, which are either of a lending institution origin or are possibly aggravated by the institution are:

1. year the loan was granted,
2. objective of the loan,
3. farm appraisal,
4. duration of loan, and
5. mismanagement of the loan by the borrower.

These five factors indicate two general areas of weakness in the BFAP's operation and one sign of strength. The first weakness seems to be a lack of sufficiently trained field personnel. The factors of loan objective, duration of the loan and mismanagement are personnel aggravated by the lack of experienced and trained. The granting of loans for enterprises which have chronic delinquency records in certain areas is not an advisable policy. Also the setting of loan maturities prior to, or so soon after harvest that marketing is impossible contributes to delinquency. These reasons for delinquency can only be blamed on the inexperience or lack of fieldmen.

Responsibility for loan mismanagement by the borrower must be laid at the feet of the borrower. However, it is possible that if

the BFAP fieldmen had more time to assist the borrower in the initial stages of each loan, many such mismanagement problems could be alleviated.

Analysis of the factor of farm appraisal and estimation of farm potential demonstrated that the BFAP fieldmen seemed more aware of true values and potentials than did delinquent borrowers. However, the fieldmen and the BFAP may be victims of the political system at this point. They are being asked to extend loans whose repayment schedule far exceeds the repayment capacity of the borrowers. Whether this situation is purely political or also partially caused by insufficiently trained personnel is not clear. But it is evident that loans which exceed the repayment capacity of a borrower cannot be expected to be repaid.

The BFAP's improved delinquency record and the fact that many of the delinquent loans are several years old shows the BFAP is making progress. This can be partially attributed to improved operational procedures, but this too has political overtones which were brought out earlier in the chapter.

The BFAP has demonstrated a very lenient attitude toward delinquency. In over 75 percent of the cases of delinquency, the BFAP merely extended the loan or added the condition to pay when possible. In less than 10 percent of the cases was any intervention by the BFAP noted, and the BFAP brought legal action in only 3 percent of the delinquency cases. This attitude cannot be expected to promote prompt repayment. The issue is again clouded with political and social

overtone, but such an attitude could have serious repercussions for the BFAP in the future.

The major shortcomings of the BFAP seem to be a lack of personnel, especially trained field personnel, and a conflict of interests between economic and social objectives brought on by the BFAP's political position. The officials of the BFAP are aware of these problems and have made some attempt to remedy them. The attempts are on the whole directed at the first problem, the lack of field personnel, with the hope that additional field personnel could minimize the problems which arise due to the conflict of social and economic objectives. Two programs have been initiated; the first of these is called Ban-Sip and the second is the Supervised Credit Program of Plan Costa.

Ban-Sip was developed by the BFAP to attain additional technical and supervisory help for marginal borrowers. This plan is the result of an arrangement between the BFAP and the extension service of Peru (SIPA) where the BFAP handled all credit services but advised SIPA that the borrower needed more help than the BFAP could afford him. Then SIPA provided the additional technical and supervisory help. This plan seems to hold some promise for complementing the field personnel of the BFAP, as well as assisting the marginal borrower.

The extension service development plan, which includes a supervised credit program as a part of Plan Costa, has a somewhat similar structure to Ban-Sip in that it is an agreement between the BFAP and SIPA. However, this plan divides the loan servicing responsibility between the BFAP and SIPA. Here SIPA grants the loan and provides

the technical and supervisory assistance while the BFAP disburses and collects the loan.

The division of the loan responsibility has proven to be a factor of delinquency. While the BFAP does set on a board which reviews all loans to be granted, the political and social factors usually dictate acceptance of all loans presented. The money involved is a special fund previously noted as Fondo de Fideicomiso for which the BFAP feels no direct responsibility. As a result, the BFAP does not pursue collection of these loans and blames any delinquency upon SIPA, who, they say, granted bad loans. SIPA, in turn, says collection is not their responsibility and delinquency is because the BFAP does not work to collect the loans.

The issues are neither as simple nor as clear as presented in this brief sketch, but the division of loan responsibility does seem to be a factor that can cause unnecessary delinquency.

CHAPTER VI

THE GENERAL ENVIRONMENT: THE THIRD SOURCE OF FACTORS AFFECTING DELINQUENCY OF AGRICULTURAL CREDIT

Within this chapter the problems and factors affecting delinquency of agricultural credit which arise from the general environment will be presented. The general environment has been broken into five segments: geophysical and climatic; agricultural; economic; political and legal; social and cultural. Some of these problems and factors have been identified in the borrower study, but many which will be presented are the results of observations of the Agricultural Finance Center team during the course of their work in Peru.

The Geophysical and Climatic Segment

Two major problems are evident in this area, the topography of Peru and the climate of the various regions. Factors noted which are the result of these problems are frost, flooding, drought, and isolation of many areas of Peru from the mainstream of economic activity.

Cropping patterns and enterprise selection are dictated by the climates of the various regions. The irrigation-dependent Costa has two major problems, inadequate water and salinization of the soil. The Sierra is plagued with droughts, frosts, and floods, while the Selva has problems with flooding, diseases and re-invasion of natural flora. These problems limit the scope of feasible enterprises in the respective areas and in turn limit the economic uses which can be made of agricultural credit.

While the climatic problem limit the scope of the feasible enterprises, the topography limits transportation, marketing and communications. Due to the topography of Peru it is often impossible to transport either agricultural inputs or products, or when it is possible the cost of transportation is prohibitive.

The geophysical and climatic segment of the general environment affects all borrowers in Peru, but it establishes parameters as to the uses to which credit can be put and to the determination of which borrowers in what areas can use credit. When attempts are made to extend credit usage beyond these geophysical and climatic parameters delinquency will result.

The geophysical and climatic characteristics of Peru do not in themselves cause delinquency. They are however, limiting factors which affect credit usage and to which attention must be given by lenders and borrowers.

The Agricultural Segment

Much of the agriculture in Peru is of a traditional type in which near primitive techniques are used. Many farmers use low yielding strains of crops and animals which are often degenerate and disease ridden. Many of the farmers who operate subsistence farms cannot produce sufficient for both family consumption and for cash marketing to service their loans.

For most farmers in Peru there is a need for improved strains of disease resistant and high yielding crops and livestock. They also need more land to achieve a minimum scale of operation. However, additional arable land is scarce and very expensive to develop in Peru.

One logical answer would seem to be the transfer of labor out of agriculture so that the remaining farmers can have more land to use, and can economically adopt and use improved techniques and strains. This cannot be easily achieved because much of the underemployed labor in agriculture is also formally uneducated and has no employment opportunities outside agriculture, because of their lack of skills and because of the limited opportunities afforded by the other sectors of the economy.

The result is a paradox in which the subsistence farmers at present cannot gainfully use credit due to limitations of land, capital, techniques, and enterprises but who cannot be transferred out of agriculture because of the lack of opportunities. The solution of the agricultural production problem will only create a new social problem.

Since nearly 80 percent of the farmers in Peru are subsistence, or near subsistence farmers, who cannot be reasonably expected to gainfully use credit, there is a serious limitation on the use of agricultural credit as a development tool. Efforts to change the land tenancy structure, educational levels, techniques, and strains must be made before credit as credit can be used. Any assistance to these farmers prior to their attainment of credit worthiness should not be called credit and should not be extended by a credit institution.

The Economic Segment

The economic segment (i.e., all of the economic activities beyond agricultural production) has many factors which directly or indirectly

affect agriculture, and as a result agricultural credit. One of the major shortcomings is the lack of economic opportunities for farmers at this time. But this does not directly affect agricultural credit. The major factors affecting agricultural credit and the delinquency of agricultural credit are the infrastructural components of the economic segment; notably transportation, marketing, and communications.

Transportation seems to be one of the outstanding needs for better use of agricultural credit. Many farmers at present have no access to cash markets, and many who do cannot economically ship their products to the markets.

While transportation is a part of marketing there is also a basic shortage of storage, processing, and central markets to facilitate the movement of agricultural products. Market communications, as well as technical information, is lacking in much of Peru. Movement of products, as well as improvement of operations, suffers as a result.

The economy is not providing sufficient capital inputs for agriculture at economically feasible prices. The price level of capital inputs has been rising rapidly while the price level of agricultural products has been maintained at a fairly constant level due to price legislation.

The agricultural sector is dependent upon the rest of the economic structure and any shortcomings or problems in the economic structure will be reflected in the performance of agriculture and also in the use of agricultural credit.

The Political and Legal Segment .

The political situation in Peru is complex. The present government is democratic and committed to total economic and social development. The constitution guarantees a free and competitive economy. However, priorities and political opinions seem to indicate a governmental bias toward the industrial sector of the economy. This governmental policy cannot be categorically denounced since it is a genuine effort of the government to enhance development. However, there are resulting factors which arise that affect agriculture and agricultural credit. These factors are noted in legislation which is presently in effect, as well as various other governmental programs and policies.

The Constitution of Peru recognizes free trade, commerce, and industry to be desirable. However, it provides for emergency situations in that laws and/or presidential decrees can limit and regulate such free commerce and enterprise. At present there are three areas in which laws affect agriculture: the areas of speculation, food prices, and use of land.

The laws regulating speculation are the result of World War II legislation, laws numbered 10906 and 10551, which along with constitutional provisions, prohibit unjustified stoppage of any products or services of primary necessity. The major problem with these laws is not the intent, but rather the hazy wording and unclear interpretation.

Normal speculation and storage which serve vital functions is marketing of agricultural products can be interpreted as illegal under

the existing legislation. The result has been a nearly complete lack of central market and storage development for agricultural products in Peru.

Food prices can be governed under constitutional provisions and a 1964 law which permits the president to lower food prices for 180 days by decree. The provision of low cost food to the people is socially laudable, but there is no provision for reimbursing farmers for the lower prices they are forced to take during such periods. Nor are there any provisions for lowering prices of agricultural inputs. As a result, farmers have been legislated into a acute price squeeze.

The legislation governing land use is found in articles 5 and 6 of law number 10551 which dictates that certain percentages of all cultivated lands must be dedicated to the production of food crops which the Ministry of Agriculture will specify. Failure to comply with this law can result in fines, imprisonment or expropriation of the land and products involved.⁴¹

There are several other national laws and some local laws which affect agriculture, but these three areas are the most notable and have the greatest effect on agriculture at this time.

The speculation problem is more a problem of clarity, and need. Its effect is primarily one of hindrance to the marketing system in its present form. However, the price control measure and regulation of land use can directly affect agricultural credit. Many delinquent borrowers noted that low prices were the reason for their delinquency, while others

⁴¹Much of this information was taken from an article by Fred L. Mann and Raul Munoz Cabrera; Price Policies, published by the Iowa Universities Mission in Lima, Peru, July 1966.

said they could not afford inputs such as fertilizer. So this law at this time is seen to be a factor affecting delinquency in Peru.

The two basic interests of the Peruvian government, social and economic development, are reflected in many of the government sponsored programs and agencies. However, these two goals are not always perfect complements. In actuality conflicts between these goals may be factors of delinquency in the use of agricultural credit. Such conflicts are found in the Banco de Fomento Agropecuario del Peru, in the extension service Plan Costa, and in the agrarian reform program.

The BFAP is obligated to extend credit to small and medium sized farmers at lower interest rates than large farmers pay. The problem here is that many of the smaller farmers are not credit worthy regardless of the interest rate that they pay. However, social and political factors call for such loans. Another problem here is that the larger farmers are being asked to subsidize a social arm of an economic institution through higher interest rates. This cuts down the capitalization and development potential of these larger farmers, as well as placing greater financial burdens upon these borrowers which in turn increases the risk of delinquency.

The extension service's Plan Costa is a regional economic and social development plan and is realizing a great deal of progress in both of these goals. However, the overall plan includes a credit program which is referred to as a supervised credit program. This program has been previously discussed in Chapter V in its connections with the BFAP. Beyond

the problem of division of responsibility outlined in Chapter V, it must also be noted that this program in its attempt to give capital bases to Costa farmers is extending loans whose repayment schedules are higher than the cash flows of the farms. In cases such as these, repayment is impossible and delinquency must result.

The agrarian reform program is achieving a great deal of success in transferring titles and improving tenancy situations, but due to factors such as lack of funds, lack of arable land and population pressures, many of the new farms resulting from the program are small and often uneconomic units.

Many of the problems noted here are unexpected repercussions of well intended policies or programs. Nevertheless, these problems adversely affect the use of agricultural credit and must be carefully considered if improvement of credit use and lower delinquency levels are to be achieved.

The Social and Cultural Segment

Consideration of the Peruvian society and culture, the last segment of the general environment, is the most subjective area of consideration in this thesis. This area warrants consideration for two reasons. The first is that while little empirical evidence is available regarding the exact degree of social and cultural involvement in the performance of any institution, it is accepted that there is involvement. The second reason is that this involvement has often been blamed for the failure of

development attempts with such unfortunate statements as, "Those people are immoral, lazy, or crooked."

In cases in which this latter situation is found to prevail, no long term success of any project or institution can be expected. There is also a gross lack of understanding on the part of the developers. Such lack of understanding can be as fatal to an institution as any other factor noted in this thesis.

The Peruvian culture and society has a rich and proud heritage. It is the seat of the oldest university in the Americas and has a strong educational heritage. However, Peru has traditionally been a bimodal society with a small upper class and a large lower class. The upper class was the only group with access to education, and the values of this class dictated a philosophic orientation to all educational pursuits.

The rise of an emerging middle class in the recent past has also ushered in a rise of technically oriented education. However, there is still a lack of technically trained people in Peru to handle the technological needs of the rapidly developing economy.

Attempts to provide general education to the masses of Peru are hindered by three lacks: the lack of interest by many of the people in the lower class; the lack of facilities and teachers; and the lack of opportunities in Peru at this time for these lower class people.

Attitudes such as are embodied in Simmon's concept of comechados are unfruitful but are the result of the instability of much of Peru's

history. Such attitudes can be expected to change with the improvement of opportunities and stability which are being achieved at present in Peru.

Changes in social and cultural attitudes, values, and mores are achieved only slowly and then only when the changes are compatible, communicable and of realizable value. Efforts should be made to improve the cultural and social environment to be more receptive to the forces of development, but the projects and institutions involved in this development process must be compatible with the social and cultural values at the time of implementation and flexible enough to change with changes in these values.

Many of the problems presented in this chapter are unchangeable, at least in the short run. Others can be modified, but in either case these factors must be considered before any credit institution can be expected to approach its optimal level of operation.

CHAPTER VII

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary and Conclusions

The text of this thesis and the study and analyses which have led to this final form have all taken their direction from the general hypothesis and sub-hypotheses presented in the introduction:

That by interviewing a sample of delinquent and non-delinquent credit users of the Banco da Fomento Agropecuario del Peru and by comparing significant differences in economic, geophysical, and cultural variables associated with the two groups (delinquent and non-delinquent credit users) causal factors associated with credit delinquency in Peru can be identified.

Sub-hypothesis A: Further, variables associated with the borrower relating to his micro situation such as resources, production techniques and personal attitudes affect the delinquency levels of agricultural credit.

Sub-hypothesis B: Further, variables associated with the lending institution such as institutional objectives, operational procedures, and institutional resources affect the delinquency levels of agricultural credit.

Sub-hypothesis C: Further, variables associated with the general environment within which the borrower and lender operate such as climate, infra-structure and social attitudes affect the delinquency levels of agricultural credit.

Because of the breadth of the delinquency problem a broad operational hypothesis is a necessity. Sub-hypothesis C goes beyond the usual limits of credit and delinquency analysis because factors beyond the borrower and the lender do affect credit.

Forty-eight variables have been tested and twenty-six have been found to be significantly associated with delinquency of agricultural credit in Peru. Some of these twenty-six variables can be justly assigned to each of the sub-hypotheses. Therefore, the general hypothesis and the sub-hypotheses are accepted. Beyond this verification the twenty-six significant variables afford insight into delinquency, and serve as indicators of more general factors.

All of the specific factors tested, regardless of level of significance, demonstrated a high degree of overlap between delinquent and non-delinquent borrowers. The comparison of long-term delinquents and non-delinquents shows greater disparity in many cases, but substantial overlap remains even in this comparison. However, when the specific factors of similar orientation are grouped into composite factors the total picture becomes more clear.

Three basic composite factors affecting delinquency have been advanced at the borrower level. They are: the borrower's managerial ability, the borrower's resource package, and the borrower's attitudes. The interaction of these three composite factors determines the success of credit at the borrower level. The strength of each of these composite factors is dependent upon their factors.

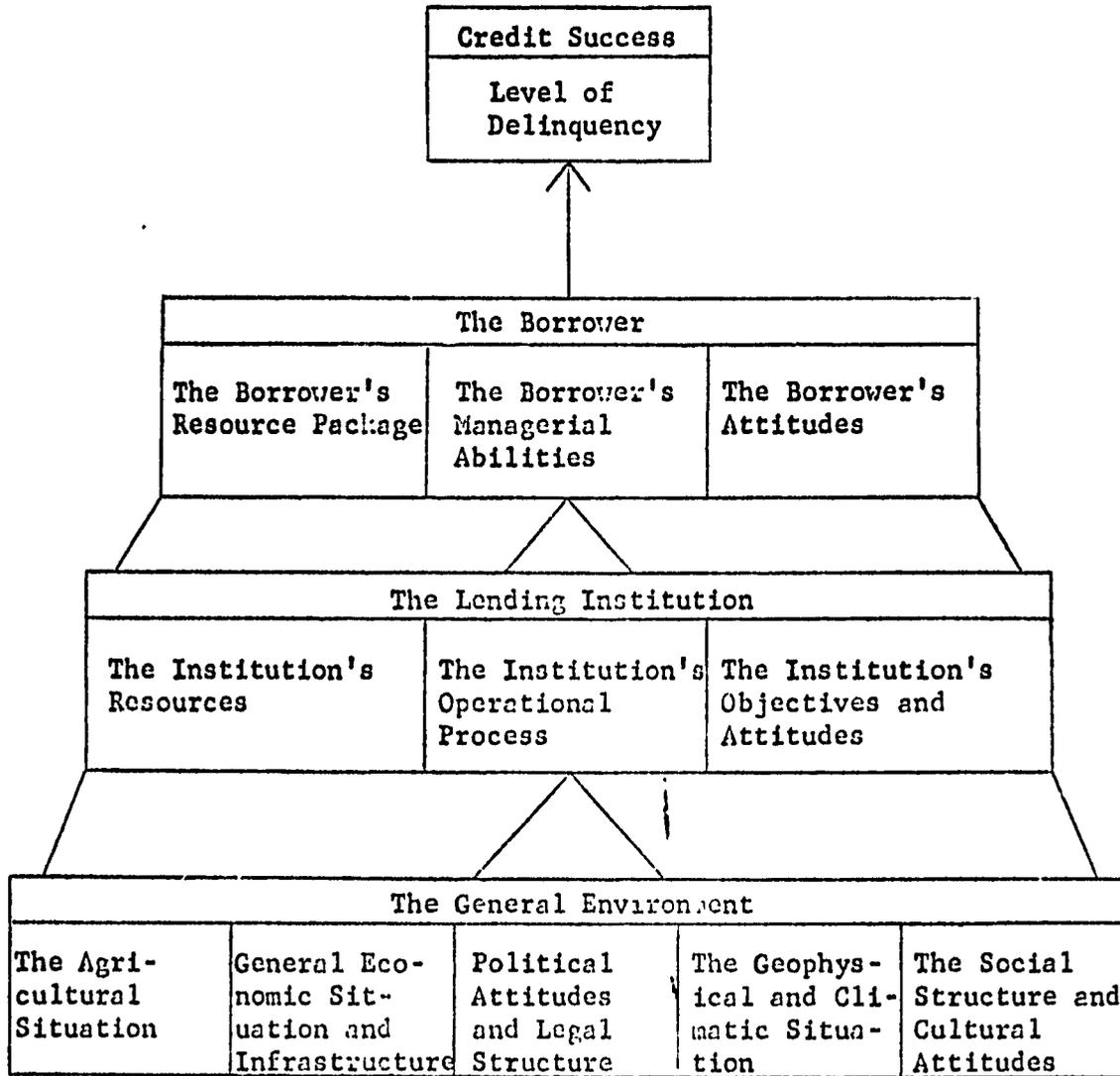
Three composite factors are also noted within the lending institution: the resources of the institution, the objectives of the institution, and the operating procedures and performance of the institution.

When the general environment is considered a much wider spectrum of factors become possible. However, the major composite factors seem to be the agricultural situation, the general economic situation, the infrastructure, the political attitudes and legal structure, the general physical environment, and the social attitudes and cultural structure.

The success of credit and the level of delinquency are the result of interaction between and among all of these composite factors, as well as with many of the specific factors. All sectors must have some necessary level of compatibility and competency before the system can be expected to operate. The degree of operational efficiency is determined by the actual level of the necessary conditions in each sector. One weak sector component could possibly offset several strong components or even a basically strong system. Figure 10 is a graphic attempt to represent the interaction concept of the credit system with the larger social, economic, and geophysical structure.

Each of the eleven composite factors which form the base of credit in Figure 10 has been presented, but many only indirectly through the presentation of the component factors, and often in widely separated areas of the thesis. In order to tie these parts together each of the composite factors will be reconsidered here.

Figure 10: The Interaction System for Credit



The average Peruvian farmer, and potential agricultural borrower, has a very limited resource package. The land-population pressures are becoming critical. Most of these farmers are operating at a near subsistence level and have very little chance of capitalization for improvement of the quality or quantity of their resource package. Because of the limitations of the resource package most advanced techniques are uneconomical at this time.

While this is the case for the average farmer in Peru it has been noted in the study that delinquent agricultural borrowers have on the average smaller and/or poorer resource packages than do non-delinquent farmers. As the resource package is the borrower's base, the quality and quantity of the components which make up the resource package are definitely determinants of the borrower's ability to use agricultural credit successfully and are therefore factors of delinquency.

The borrower's potential managerial ability in Peru is subject to the availability of technology, of information, and of education. However, his realized managerial ability is dependent upon the use he makes of available technology in the operation of his resource unit. This realized managerial ability is the determinant of the degree of success or failure that the borrower will encounter in his operation and in his use of credit.

The modal level of education of agricultural borrowers in Peru is four years of elementary school. The quality of this education has been seriously questioned because of the lack of facilities and the lack of trained teachers. While many delinquent agricultural borrowers were

found to be highly educated, the delinquency was not the result of the educational level. A definite correlation was found between education and income, and for the non-delinquents there is a positive correlation between education and technologies used.

Formal education is only one component which contributes to the borrower's managerial ability; practical experience and knowledge can be equally important. This seems particularly important in Peru, and the analysis of the technologies used demonstrated a disparity between delinquent and non-delinquent borrowers in almost every case in regard to use of technology: that is, the non-delinquents use more and better technologies.

Consideration of the composite factor of the borrower's attitudes raises three major points. The marginal, subsistence farmer in Peru is understandably reluctant to change or try new techniques or varieties. His operation and his life are in precarious balance and as a result he exhibits great fear of the unknown. Such an attitude is understandable and no change can be expected until assurance can be given to the farmer that change will not precipitate disaster.

The second point deals with the philosophic orientation of many Peruvians which directs their interest away from agriculture or any other technical orientation. This is probably true for many of the better educated farmers who are delinquent even though their resource package, and potential managerial abilities are substantial.

The third point parallels what Simmon's called *comechado*, the attitude of some Peruvians that anything from the government or a governmental agency is a gift and therefore they need not repay such grants or loans.

All of these attitudes demand modification or elimination before credit can be used in a normal sense of credit with any hope of success, and without delinquency.

In looking at the lending institution, more specifically the Banco de Fomento Agropecuario del Peru, it was determined that the BFAP has ample resources as to capital or capital access, sufficiently comprehensive coverage of the country in regard to offices and seemingly sufficient complementary facilities such as trucks and office equipment. However, the BFAP does have an acute shortage of trained personnel, especially at the field or loan supervisor and evaluation level. This shortage determines many of the operational procedures, but more importantly it limits the time which a fieldman can devote to evaluating and servicing any loan. Thus, some unsound loans are made and some others break down because of the inability of fieldmen to follow up the initial granting of the loan with the necessary supervision and service.

The Banco de Fomento Agropecuario del Peru's operational procedures reflect both the limits of personnel and the objectives of the BFAP. The lack of personnel can be partially blamed when the terms of a loan do not match the borrower's needs whether in amount or time. This can be due to lack of time to properly evaluate the loan application, or merely inexperience or lack of knowledge on the parts of both the fieldman and the loan applicant. Also the social objectives of the BFAP are such that some loans might be extended which are not economically sound. In the study of delinquent borrowers it was also noted that several loans received no servicing of any kind between the day they were granted and the day that they came due.

While these procedures, or the lack thereof, can be rationalized as being the result of personnel shortages and objective conflicts, the fact that they exist indicates that the BFAP is trying to do too much, to rapidly, and with too little. This returns the responsibility of at least some of the delinquent loans to the BFAP.

The question of how the objectives of the Banco de Fomento Agropecuario del Peru affect delinquency is not whether any of the BFAP's objectives are bad, but rather how they at times conflict and cause problems. The BFAP has two primary objectives: an economic objective of providing agricultural credit, and a social objective of assisting the development of small and medium sized farmers. The conflict arises here when loans are given to farmers who cannot economically qualify but receive the loan because of social reasons. This conflict is further complicated since these loans are extended under economic terms and conditions, even though the borrower cannot hope to comply with such terms.

The BFAP has been very lenient with delinquent borrowers so neither stigma nor concern over legal action are evident, resulting in borrowers being rather unconcerned over delinquency.

The idea of faulting the BFAP for trying to do too much is not the intent nor the desire of this thesis. However, when such efforts result in delinquencies or complicate the use of credit a critical and realistic evaluation must be made and acted upon.

The other attitude of the BFAP which may have precipitated delinquency is that which seems to be held for the Plan Costa supervised credit program. While most of the blame here should be placed upon the creators and initiators of the program, the BFAP has not extended the

attention it might have to assure collection of these loans. Instead, the BFAP unofficially blames the extension service for making bad loans. This program is not the best possible solution but until another is advanced the best use possible should be made of the program.

The general agricultural situation has been reflected in the consideration of the borrower's resource package and managerial ability. Beyond these reflections the land ownership and tenancy of land are problem areas in agriculture that affect credit. Absentee ownership of land has been noted as a factor contributing to delinquency. Because of absentee holdings, communal holdings, and the absolute scarcity of arable land in Peru, there is little opportunity for farmers to buy land, or to increase their land holdings. Borrowers who buy their land are usually better credit risks for several reasons, but primarily because they receive the total return of the operation, and because they usually demonstrate greater interest in their farms.

Many of the present crop varieties and livestock breeds are low producing and very susceptible to diseases. This not only lowers the return per unit of production, but also increases the risk of delinquency through enterprise failure.

The agricultural sector of Peru is bi-modal. There is a subsector involved in commercial and often export agriculture. This sector makes up only a small portion of the population involved in agriculture, but the value of commercial agriculture is substantial as is the influence of these commercial farmers in Peru. The other subsector makes up the majority of farmers in Peru, and is made up of subsistence or near

subsistence or near subsistence farmers who have little voice either at the market place or in the formation of national agricultural policies. This disparity creates a problem in itself, since singular plans of action cannot be expected to serve the very different needs of the two groups.

The general economic situation and infrastructure affect agriculture both directly and indirectly. The basic infrastructural deficiencies such as transportation, marketing facilities, and basic communications affect agriculture directly and immediately. However, although the non-agricultural sector is expanding and rather dynamic, it is not able to offer sufficient cash markets for many Peruvian agricultural products. An even greater consequence is that it does not offer alternative opportunities for the underemployed agricultural laborers of Peru.

The lack of transportation greatly limits the economic activity of Peruvian agriculture. Isolation probably keeps nearly 50 percent of the Peruvian farmers away from effective cash markets. Without cash markets farmers cannot be users of money credit. The lack of central markets, storage, and transportation all combine to further limit the revenue opportunities of the farmers. Lack of communications slows movement of products, as well as slowing change and progress.

The political attitudes of a country can be only subjective projections of observations and legislative clues. The result of such projections by the author is that while the Peruvian government is sincerely committed to total economic and social development, at this time they are more interested in industrial development than with agriculture. In some cases social development is being advanced without accompanying economic development. The result can only be failure in cases where desires and abilities are whetted, only to be destroyed by lack of opportunities.

Price ceilings on agricultural products without subsidies to cover the negative gap between product prices and input costs is an example of non-agricultural favoritism, whether implicitly or explicitly enacted for such an affect. The speculation laws, while well meant, are causing penalties upon both producers and consumers in Peru. Legislation controlling land use which require a set proportion of the land to be used for food crops, negates many economic as well as physical laws.

The geophysical and climatic situation puts fairly explicit parameters upon the enterprises which can economically be pursued in the various areas of Peru. Attempts to operate outside these parameters will result in sub-optimal levels or in absolute failure. However, due to the present lack of transportation, of marketing facilities and of the opportunity to trade, many subsistence farmers are forced to do this very thing.

While blame for delinquency due to disregard of climatic conditions could be laid at the feet of either the borrower or the lender, part could

be extended to the infrastructural system which has failed to give the borrower the opportunity to operate in any other manner.

The social structure and the cultural attitudes of Peru are reflected in the borrower and in the lending institution. Beyond this there are structural problems which are noted in the disparity of education, political power, and economic activity. These structural problems are the result of the historical evolution of the Peruvian social structure which has resulted in an apathy by the upper classes for the lower classes. They have also kept many individuals of the lower classes from gaining the advantages of education and of political and economic awareness. This not only acts as a drag upon Peru's total development, but also affects the use of agricultural credit.

The present population pressures of certain areas in Peru which are affecting agriculture in these areas could be alleviated if the economy could offer alternatives and if the masses could receive education and political and economic experience.

The basic conclusion of this thesis is that any institution and any problem of an institution are never completely isolated, nor unique entities. Rather they are a part of the total country, reflections of that country's problems. Any extreme weaknesses in the total structure are going to dampen the effect of an institution and accent any problems it has. Therefore, when a new institution is being planned, or an old one evaluated, or modified, due consideration must be given to the total interaction system in order to achieve the best possible results.

Recommendations

Many recommendations can be made which could be expected to improve the delinquency level of agricultural credit in Peru if they could be carried out. The problem is to make realistic recommendations which are pertinent and feasible. The areas in which changes can be expected to make the greatest immediate effect are the "artificial" areas such as the lending institution and the legal structure. These two areas might be modified with a stroke of the pen.

The first group of recommendations will be directed toward the BFAP.

1. They should modify certain operational procedures:
 - a. Improve evaluation and feasibility considerations of loan applications,
 - b. Improve and increase supervision of loans,
 - c. Take firm action in cases of chronic or unwarranted delinquency.
2. Eliminate and avoid any credit programs where the responsibility of granting and collecting loans is divided.
3. Increase the number of trained personnel at the field level.
4. Separate the social and economic objectives of the BFAP in the operation of credit.
5. Encourage the use of better varieties of crops and breeds of livestock by their borrowers.

The improvement of evaluation and feasibility considerations of loan applications prior to granting would minimize delinquency due to insufficient loan funds for the enterprise, overextension of the borrower, too short a duration for completion of the enterprise, and unfeasible uses of loan funds due to resource package, climatic problems or other external parameters.

The recommendation of increased supervision should not be thought of as initiating a so-called "supervised credit program" as such programs are often conceived in development plans. Many Peruvian farmers lack sufficient technical experience and awareness, and need rather intensive assistance in their early attempts to productively use credit. All loans and borrowers need some degree of supervision, but each loan and each borrower must be viewed as a unique case with unique needs of supervision. If the BFAP can view borrowers in this way and offer the supervision on an individual need basis, a built in flexibility will be achieved that can by natural processes move borrowers from high levels of supervision to lower levels.

Both of these recommendations demand more efficient use of field personnel and will probably demand additional trained field personnel. The use of plans such as the BAN-SIP program at this time can complement the field personnel of the BFAP. However, it would be better if the BFAP could achieve sufficient staffing to carry out the whole program. The BFAP could start an intra-institutional training program independently or with the assistance of some external agency. Efforts should also be made to keep the fieldmen up-to-date with refresher-short courses.

The recommendations to continue use of the BAN-SIP plan but to eliminate the Plan Costa credit program are because of the BFAP and extension service arrangements in each of these plans. The BAN-SIP plan does not divide the responsibility of loans but offers complementary supervisory and technical aid. The present Plan Costa plan divides the loan responsibility. The division of responsibility

greatly increases the likelihood of responsibility shifting in the case of delinquency. This same possibility exists for the BAN-SIP plan but in a lesser degree. It is for these reasons that the recommendation of total BFAP staffing be strived for, but in the interim BAN-SIP is the better alternative to command additional man power at the field level.

The separation of social and economic objectives should be achieved not because either is a bad objective but because of possible conflicts. All credit should be extended upon sound economic principles. That is, sufficient potential of economic credit usage must be a precondition to granting a loan. If the economic evaluation shows there is sufficient physical potential but an extreme lack of managerial ability, the high degree of supervision offered this borrower is a social input and it will achieve the social objective without negating economics in the process. However, this social input should be a social cost and not charged to an economic institution.

A reflection of this conflict between objectives is noted in the leniency of the BFAP with delinquent borrowers. The BFAP must take prompt and firm action in cases of chronic and unwarranted delinquency. This is necessary to maintain the image of the BFAP as an economic entity, and to improve borrowers' attitudes toward timely repayment.

Exhibit

The point of encouraging borrowers to use better varieties of crops and better suited breeds of livestock is being followed at this time. However, if the encouragement were given "teeth," such as a loan condition or loans in kind, this encouragement might have more effect. As with

the supervision this point should be approached on an individual borrower basis and never as an absolute.

Beyond these recommendations for the BFAP most of the recommendations are directed at the general environment. There are two groups of these general environmental recommendations; those which can be achieved easily timewise or directly without many economic and social complications, and those which are general or have multiple complications. The first group includes:

1. Modify and clarify the laws which are presently inhibiting agriculture and are factors of delinquency,
 - a. Speculation regulation
 - b. Food ceiling regulations
 - c. Land use regulations
2. Develop more and better transportation facilities.
3. Develop better national communication for all types of information.

The clarification and modification of the laws which are presently inhibitors of agriculture activity should be the easiest to accomplish in an immediate sense. The effects of such action would come with subsequent development of storage facilities and with the reorientation of the farmers to their new situation, but such action would be of a positive nature.

The development of better transportation and communication is vital to Peru and to Peruvian agriculture. While such development is costly and time consuming, it can be achieved directly; that is, with

the physical construction of such facilities. This development is a prerequisite for most of the other recommendations and should be given priority.

Beyond these areas most of the recommendations are general. Although many are only indirectly related to agriculture and credit delinquency, the achievement of these points would improve the agricultural credit situation.

- General Point*
1. Efforts should be made to improve the quality and quantity of agricultural resources available to each agricultural worker.
 - a. Encourage out-migration of under-employed agricultural workers,
 - b. Open new lands to agriculture,
 - c. Reclaim lands which have gone out of production,
 - d. Improve and develop new irrigation systems;
 - e. Encourage farmer ownership of land and discourage unproductive absentee ownership of agricultural land.
 2. Encourage the development of marketing facilities;
 - a. Storage facilities
 - b. Processing facilities.
 - c. Central markets
 3. Encourage the development of industries which produce agricultural inputs, or provide import channels for such inputs.
 4. Encourage the development of industries which use the agricultural products or might employ excess agricultural labor.
 5. Develop and encourage education in all areas of Peru and especially stress technical and agricultural schools.

The strengthening of the general environment which most of these latter recommendations are pointed, will enable agricultural credit and agriculture in general to operate on a more secure base. Few recommendations can be given to borrowers directly. Those which are directed at changing the borrower or his position must be indirectly applied. This points out that a credit institution must be tailored to fit the borrower's needs at his present position but be able to change as the borrower changes. The goal can be summed by saying credit must be compatible, communicable, and of visual value before it can be expected to operate efficiently.

Limitations

There are several limitations which have resulted from inadequacy of data, study structure, and analytic limitations. However, the most serious limitation is lack of knowledge regarding the exact inter-relation between factors, and the degree of interaction between the components of the total system.

At this point many factors can be indicated as being pertinent in delinquency of agricultural credit, but the optimum condition of each of these factors, and the optimum combination of these factors cannot be ascertained. This knowledge would enable developers to place priorities on factor or component development and would enhance the efficiency of development significantly. The major problem is one of establishing the "production functions" of credit success factors.]

APPENDIX A

APPENDIX A

SCHEDULE USED TO COLLECT BORROWER INFORMATION

ENCUESTA A LOS PRESTATARIOS

La Universidad del Estado de Ohio

y

El Banco de Fomento Agropecuario del Perú

Encuesta OSU/B

Fecha _____ Oficina del Banco _____

INFORMACION SOBRE EL FUNDO

1. Localización del Fondo:

Departamento _____ Provincia _____ Distrito _____

Zona _____ Sub-Zona _____ Sector _____

Costa _____ Sierra _____ Selva _____ Altitud (m) _____

Distancia de la Oficina al fundo: _____ Km. _____ Horas.

2. Número total de hectáreas en el fundo: _____ Ha.

a) Estimado del valor total del fundo (casco y mejoras):

Por el prestatario S/. _____ Por el Perito S/. _____

b) Número de lotes: _____ Distancia en promedio entre

los lotes: _____ Kms.

3. Cuantas hectáreas son: Propiedad _____ ha.

Arrendamiento _____ ha.

Otras formas de tenencia:

_____ ha.

_____ ha.

4. Cuantos años trabaja el fundo: _____ años.

a) ¿Vive en el fundo? Sí _____ No _____

b) ¿Administra su fundo directamente? Sí _____ No _____

5. Uso de la tierra en la Campaña 1964-65:

a) Cultivos:

Tipo de Cultivo	Número de Has.	Estimado Costo Total de Producción	Estimado del Rendimiento de la Producción. (Indicar unidades)	Valor de las Ventas, ó su estimado. (S/.)

b) Pastos:

Tipo de Pastos	Número de Hectáreas	Variedades Principales de Pastos
Naturales		
Cultivados		

c) Hectáreas no usadas en la agricultura: _____ has.

1) ¿Por qué no han sido usadas? _____

6. Cómo ha adquirido el título de propiedad de su fundo ó el uso de él:

- a) Comprada _____ e) Tierra Comunal _____
 b) Herencia _____ f) Arrendamiento _____
 c) Ocupante Precario _____ g) Otras formas _____
 d) Reforma Agraria _____

INFORMACION SOBRE EL ULTIMO PRESTAMO - REEMBOLSADO O VENCIDO

7. ¿Cuántos préstamos ha recibido del Banco en los últimos 3 años?

a) ¿Hay en el presente momento algún préstamo vigente del solicitante? Sí _____ No _____

b) ¿Hay algún préstamo vencido pendiente de pago? Sí _____
 No _____

Si la respuesta es afirmativa, entonces llene las preguntas del 8 al 15 sobre el préstamo vencido pendiente de pago y complete las preguntas en el cuadro "Préstamo Vencido".

Si la respuesta es NO, entonces llene las preguntas del 8 al 15 sobre el último préstamo que ha sido pagado y no conteste las preguntas del cuadro "Préstamo Vencido".

8. ¿Cuál fué la fecha del préstamo? Aprobado _____
 Ejecutado _____

9. Monto del Préstamo: S/o. _____

10. Plazos de duración del préstamo: _____ meses, ó _____ años.

11. Tasa de interés: _____ %.

12. Plan de Entregas:

Fecha	Monto

13. Plan de Reembolso:

Fecha	Monto

14. Objeto del Préstamo: _____

15. ¿Tuvo el préstamo informe favorable del Perito? Sí _____ No _____

PRESTAMO VENCIDO

Contestar las siguientes preguntas, solamente para el prestatario que tenga préstamo vencido.

I. ¿Cuánto tiempo ha transcurrido desde el vencimiento?

_____.

II. Monto del saldo deudor: S/o. _____

III. Razones por las que ho ha pagado el préstamo:

A) Prestatario _____

B) Respuesta por el Perito | _____

IV. ¿Qué acción ha tomado el Banco?

A) Prestatario _____

B) Respuesta por el Perito _____

V. Número de visitas al fundo por el personal técnico del Banco durante el plazo del préstamo:

A) Prestatario _____

B) Respuesta por el Perito _____

VI. Número de visitas al fundo por algunos técnicos ajenos al Banco:

Prestatario _____

VII. ¿Notificó el Banco a los prestatarios de la fecha de vencimiento de sus pagos?

A) Prestatario: Sí _____ No _____

B) Respuesta por el Perito: Sí _____ No _____

Si la respuesta es SI, Cómo lo hizo.

A) Prestatario _____

B) Respuesta por el Perito _____

VIII. ¿Dónde ha sido aprobado el préstamo?

Agencia _____ Sucursal _____ Principal _____

DATOS SOBRE INGRESOS

16. ¿Cuál ha sido su ingreso total en la campaña 1964-1965?

S/o. _____

a) ¿Cuál ha sido el valor ó ingreso en la campaña 1964-

1965 para productos agrícolas y/ó pecuarios, finan-

ciado con el crédito del Banco? S/. _____

b) Financiado con otras fuentes de crédito:

S/o. _____

c) Financiado con recursos propios: S/. _____

d) ¿Cuál ha sido el ingreso proveniente de trabajos ajenos

a su fundo en la campaña 1964-1965?

S/o. _____

17. ¿Tiene el prestatario alguna cuenta de ahorro?

Sí _____ No _____

18. ¿ Recidió algún préstamo de otra fuente de crédito?
 Sí _____ No _____ ¿De dónde? _____
 ¿ Qué tasa de interés pagó? _____% Monto? S/. _____
19. ¿ Tiene deudas no relacionadas con la empresa agropecuaria?
 Sí _____ No _____ ¿Cuánto? S/. _____
 ¿ Por qué? _____
 ¿ A que tasa de Interés? _____%

INFORMACION GENERAL

20. ¿ Cuáles son los mayores mercados para sus productos?
 Lugar _____ Distancia del fundo _____ Kms. _____ horas.
 Lugar _____ Distancia del fundo _____ Kms. _____ horas.
 ¿ Vende sus productos en el mismo fundo? Sí _____ No _____
 ¿Cuál es su mejor mercado? _____
 ¿ En que forma le pagan cuando vende sus productos?

21. ¿ Qué medios de transporte emplea para llevar sus productos al mercado y/ó transportar sus insumos al fundo? Indicar con "P" en caso de productos y con "I" en caso de insumos; si son los dos P+ I.
- | | |
|----------------------|-----------------|
| a) Camión _____ | d) Animal _____ |
| b) Ferrocarril _____ | e) A pié _____ |
| c) Marítimo _____ | f) Avión _____ |
22. ¿ A qué distancia se encuentra la carretera de su Fundo?
 _____ Kms. ó _____ horas.

23. ¿Són transitables estas carreteras durante todo el año?
 Sí _____ No _____ ,
 a) De no serlo que dificultades ofrecen? _____
24. ¿Cómo es la lluvia en su área para cultivos?
 Suficiente _____ Insuficiente _____ Excesiva _____
25. ¿Cuáles son los meses de lluvia en su área?

26. ¿Cuál es el clima en general? _____
27. ¿Háy problemas con sus cultivos a cuasa del clima?
 Sí _____ No _____ ¿Cuáles són? _____

28. ¿Tiene riego en su fundo? Sí _____ No _____
29. ¿Cuál es la fuente de agua para riego?
 Río _____ Laguna _____ Pozo _____
 Otras _____
30. El sistema de riego es:
 A) Privado (propio y usado por una persona) _____
 B) Público (propiedad del gobierno) _____
 C) Comunal (propio y usado por más de una persona) _____
31. ¿Tiene agua suficiente para sus cultivos? Sí _____ No _____
 a) Si es NO, cual es la época que no hay suficiente agua?

32. ¿Cuánto cuesta el agua de riego por campaña? S/. _____
33. ¿Usó fertilizantes en la campaña? Sí _____ No _____

Si es SI:

Tipo y concentración (Natural y/o químico)	Procedencia		Cantidad usada por Hectárea.	Costo por Unidad a su fundo. (Ind. unidad)
	Lugar	Distancia del fundo		

34. ¿Usó pesticidas (insecticidas, fungicidas, hierbicidas) en la campaña 1964-1965? Sí _____ No _____

Si es SI:

Nombre Comercial y Concentración	Procedencia		Cantidad Usada por Hectárea	Costo por Unidad (Indicar la Unidad).
	Lugar	Distancia del Fundo		

35. ¿Usó productos veterinarios, en la campaña 1964-1965, para sus animales? Sí _____ No _____

Si es SI:

Nombre	Valor

36. ¿Usó alimentación suplementaria, en la campaña 1964-1965, para sus animales? Sí _____ No _____

Si es SI:

Nombre	Valor puestos en el Fundo

37. ¿Es miembro de alguna organización agrícola? Sí _____ No _____

Si es SI: ¿Cuáles son? _____

38. Indique sus fuentes de información agropecuaria en orden de importancia; numerándolas.

- a) Amigos _____ f) ONRA _____
 b) Periódicos _____ g) Organizaciones Agrícolas _____
 c) Radio _____ h) Firmas Comerciales _____
 d) Banco de Fomento _____ i) Ninguna fuente _____
 e) SIPA _____ j) Otros _____

39. Indique en que forma prefiere recibir esta información.

40. ¿Ha tenido algún gasto imprevisto en la chacra ó ajenos durante el año pasado? Sí _____ No _____

¿Cuáles fueron? _____ Monto S/. _____

INFORMATION PERSONAL

41. ¿Cuántos años tiene? _____
 42. ¿Lugar de procedencia? _____
 43. ¿Cuál es su grado de instrucción? _____

44. ¿Es Casado? Sí _____ No _____

45. ¿Cuántas personas viven en su casa? _____

Número y grado de parentesco , _____

a) ¿Cuántas de estas personas ayudan con el trabajo del
 fundo? _____

b) ¿Algunas de estas personas reciben parte del ingreso
 del fundo? Sí _____ No _____

Si es SI:

Forma	Valor Estimado

c) ¿Algunas de estas personas, contribuye con los gastos
 familiares? Sí _____ No _____

Si es SI:

Forma	Valor Estimado

PARA SER CONTESTADAS POR EL PERITO

1. El prestatario es: Indígena _____
 Mestizo _____
 Blanco _____
 Negro _____
 Asiático _____

2. ¿Habla el prestatario castellano?
 Sí _____ No _____

3. Es un préstamo ordinario _____ ó un préstamo del convenio
 Ban-Sip _____.

INVENTARIO GENERAL DE LOS BIENES DEL FUNDO

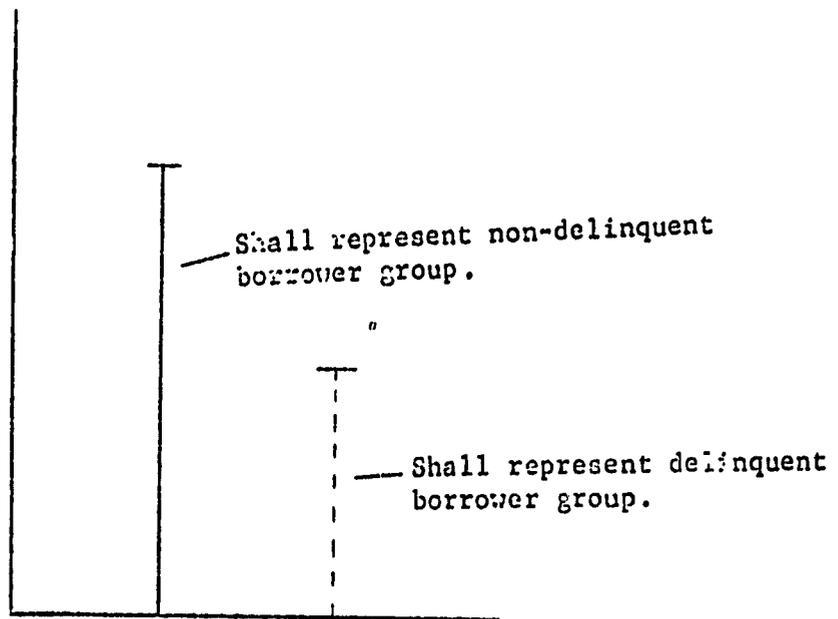
Construcciones, Equipos, Irriga ción, Cercos, etc.	Tipo	Edad	Costo Original	Valor ac tual, es timado p. el Prest.	Valor ac- tual esti mado p. el Perito.
Valor Total Estimado				S/.	

ANIMALES (Por clases.)	Raza	Número	Valor actual estimado p. el Prestata- rio.	Valor actual estimado por el Perito.
Valor Total Estimado.....			S/.	

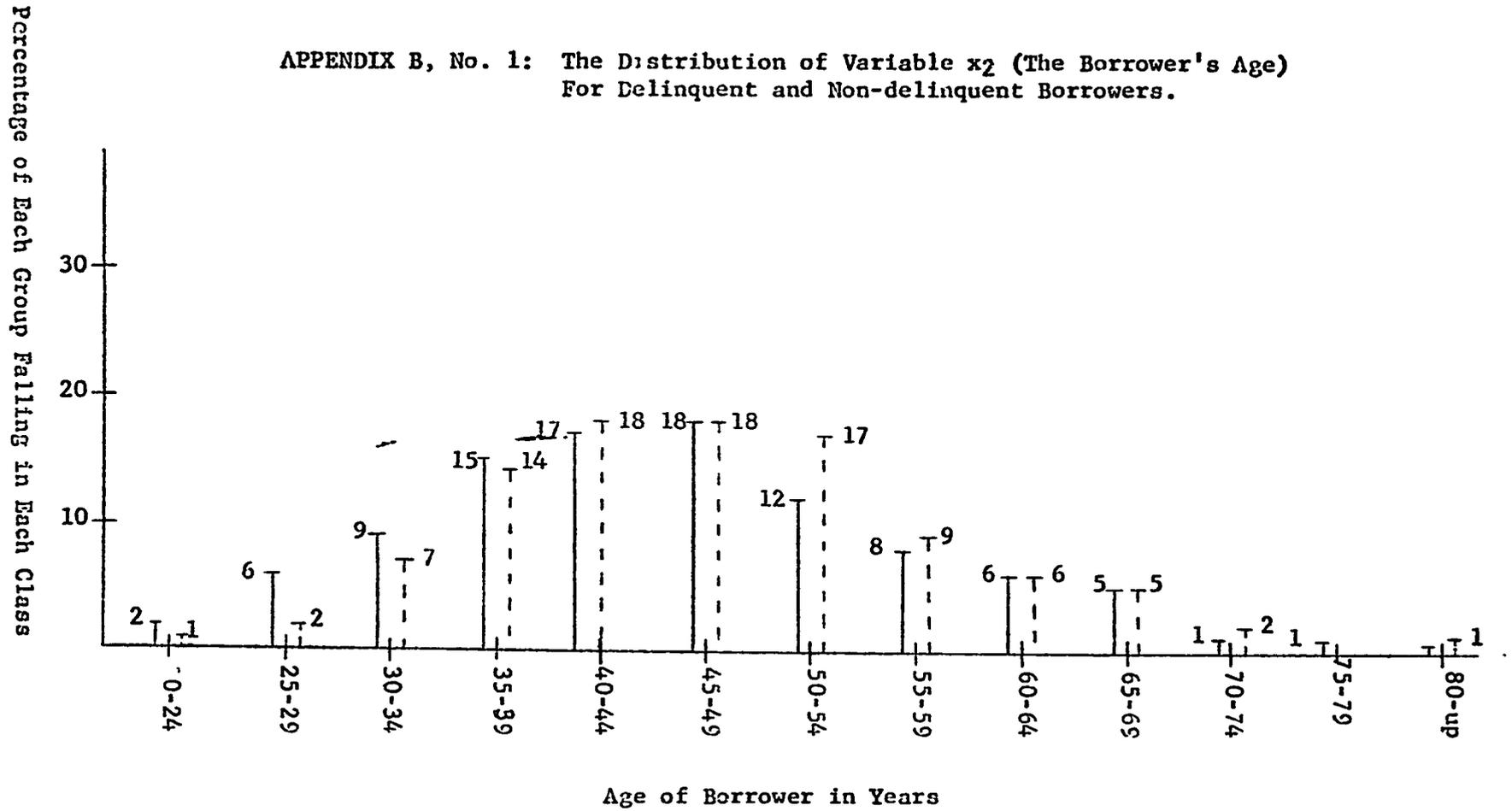
APPENDIX B

APPENDIX B: Percentage Distributions of
Selected Variables Presented in Chapter III.

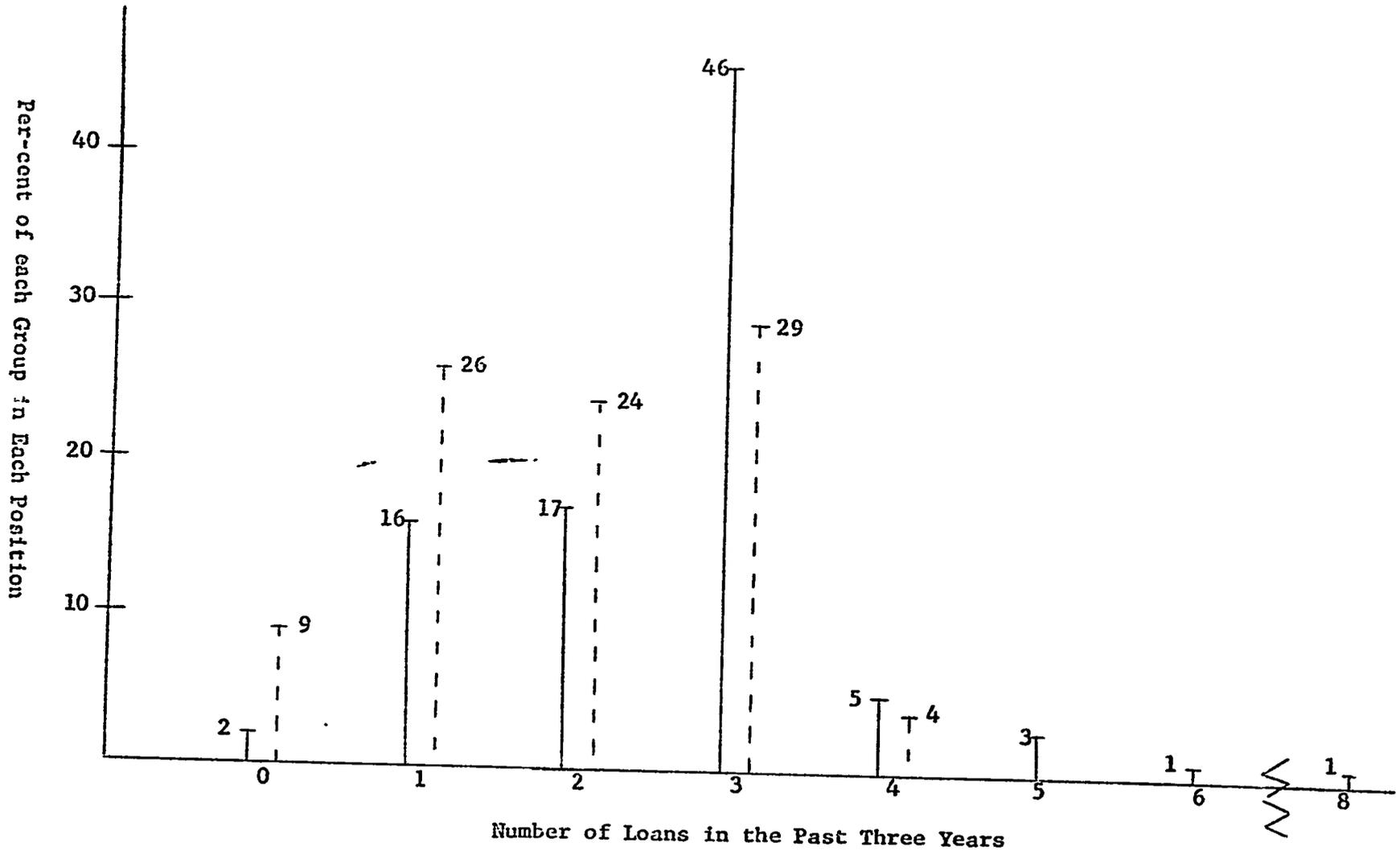
Code: For all graphs in "Appendix B".



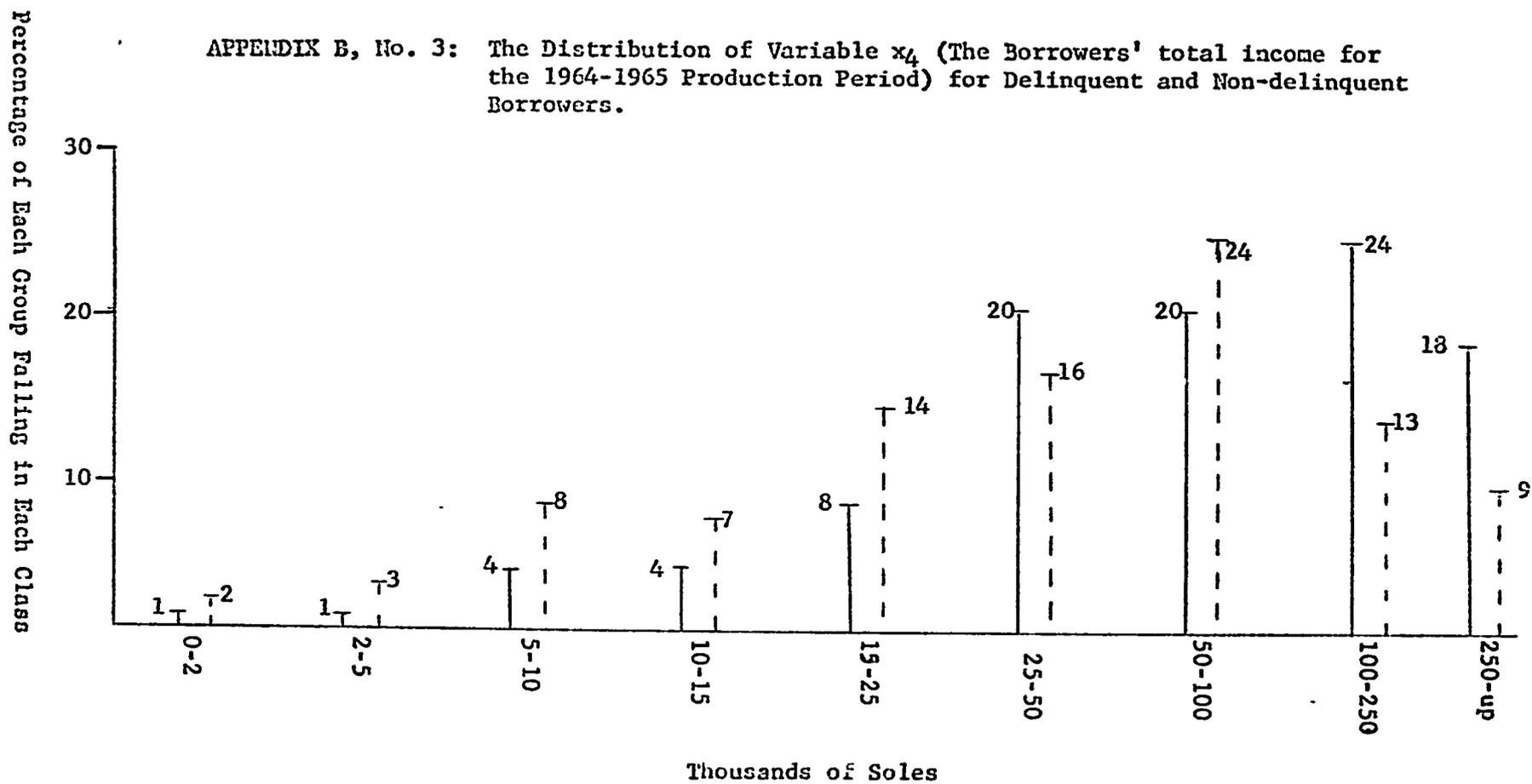
APPENDIX B, No. 1: The Distribution of Variable x_2 (The Borrower's Age) For Delinquent and Non-delinquent Borrowers.



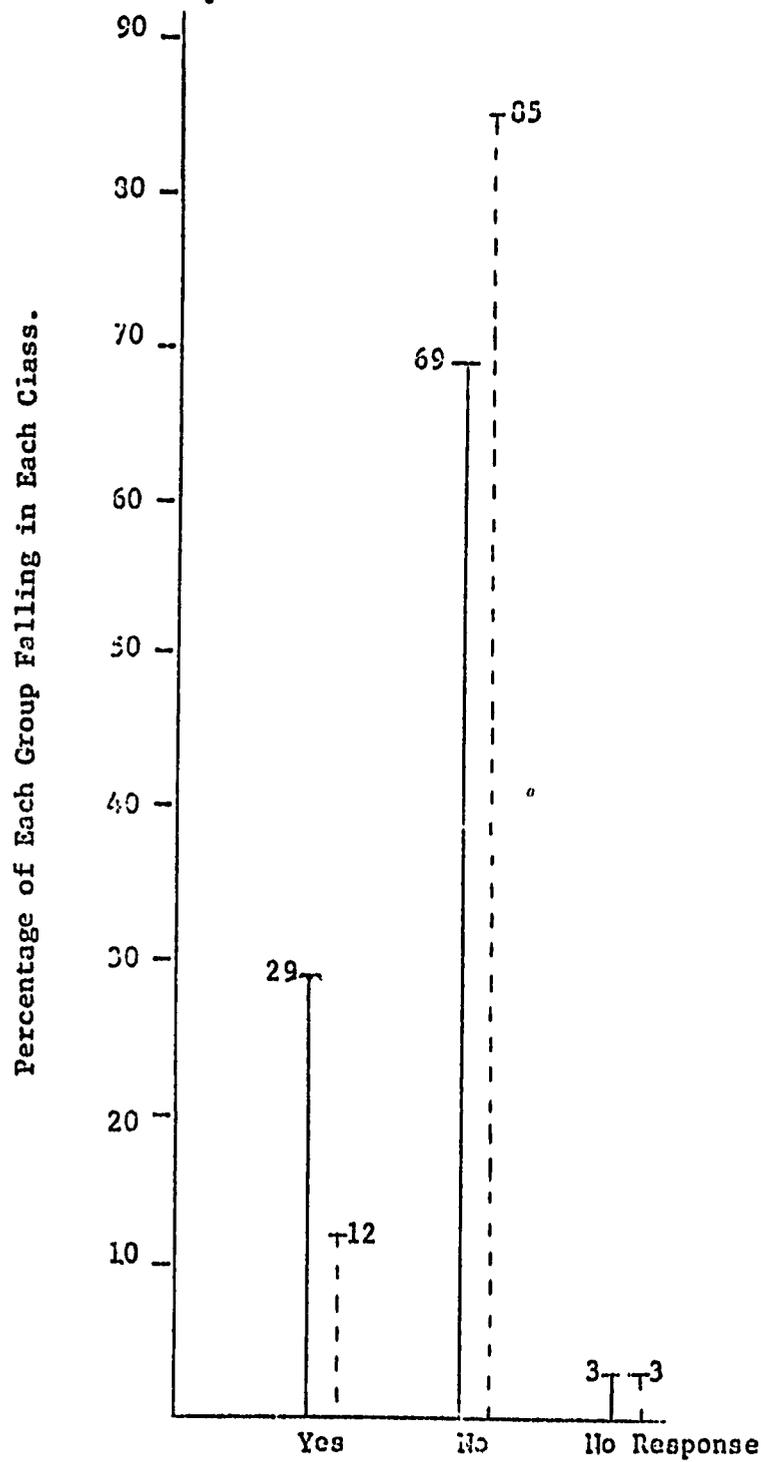
APPENDIX B, No. 2: The Distribution of Variable x_3 (The Number of Loans in the Past Three Years) for Delinquent and Non-Delinquent Borrowers.



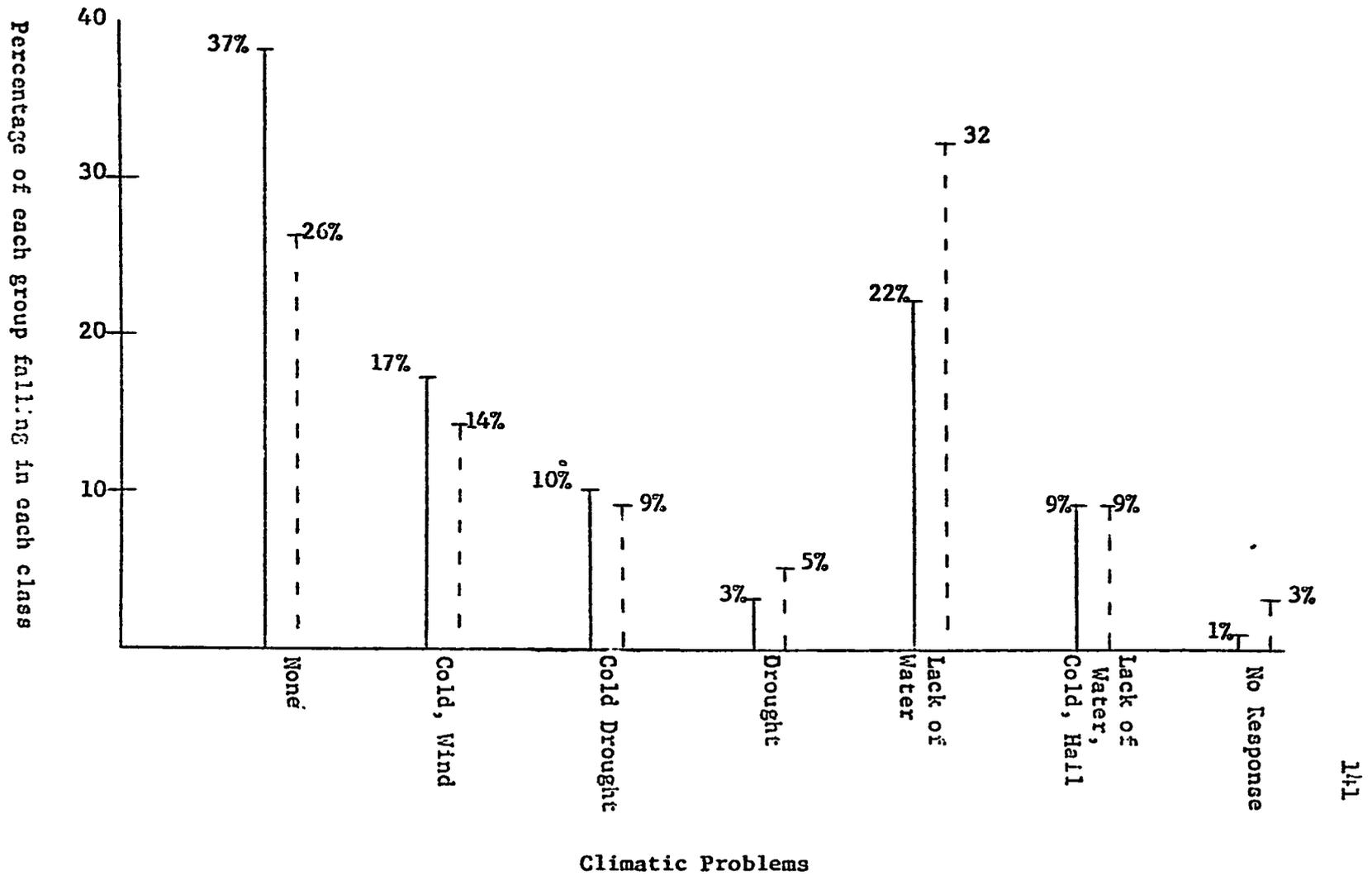
APPENDIX B, No. 3: The Distribution of Variable x_4 (The Borrowers' total income for the 1964-1965 Production Period) for Delinquent and Non-delinquent Borrowers.



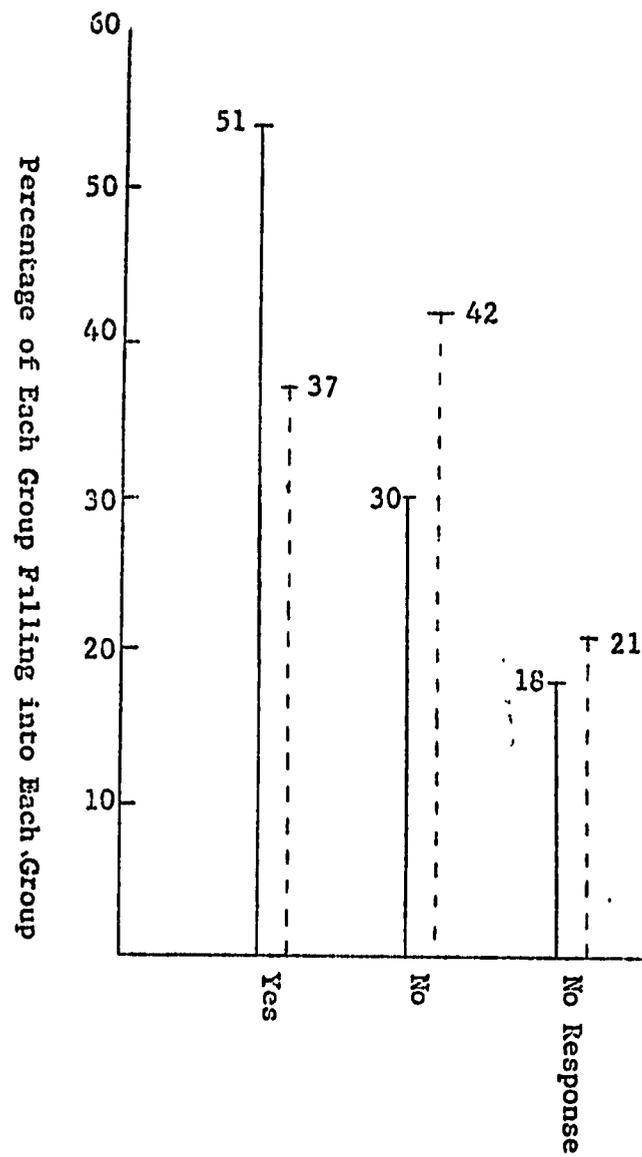
APPENDIX B, No. 4: The Distribution of Variable x_5 (Does the Borrower have a savings account) for delinquent and non-delinquent borrowers.



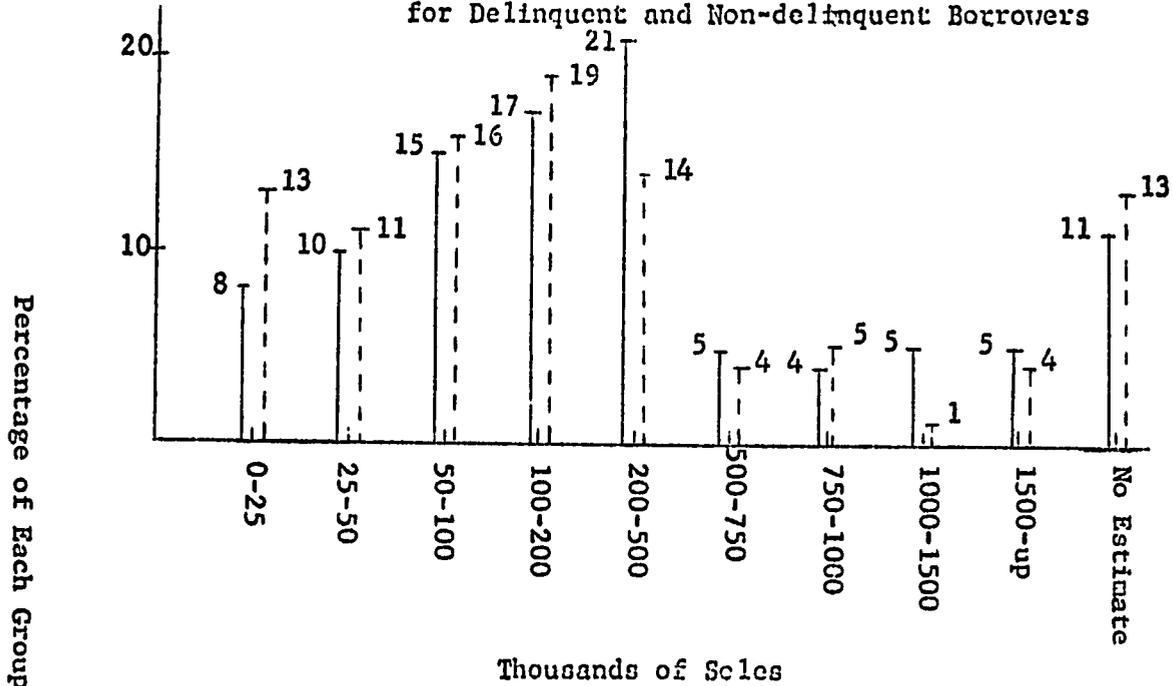
APPENDIX B. No. 5: The Distribution of Variables x_6 (Climatic Problems the Borrower Encounters) for Delinquent and Non-delinquent Borrowers.



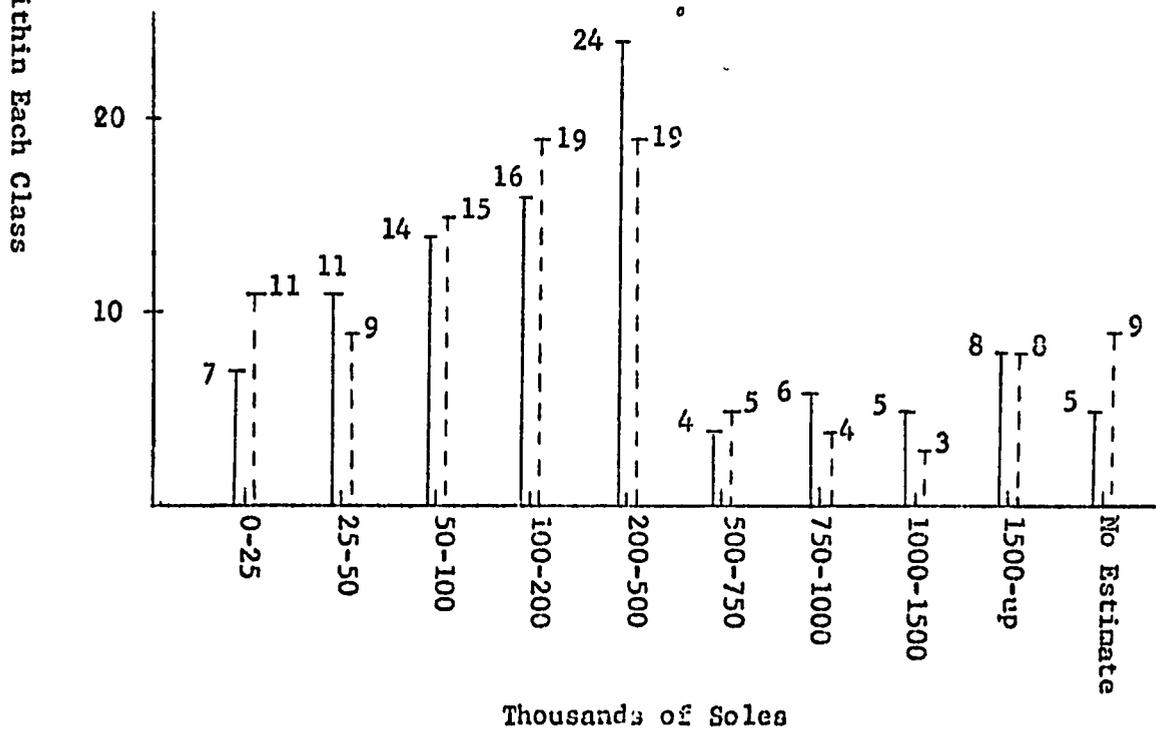
APPENDIX B, No. 6: The Distribution of Variable x₇
(Does the Borrower Have Adequate
Water for Production) for Delinquent
and Non-delinquent Borrowers.



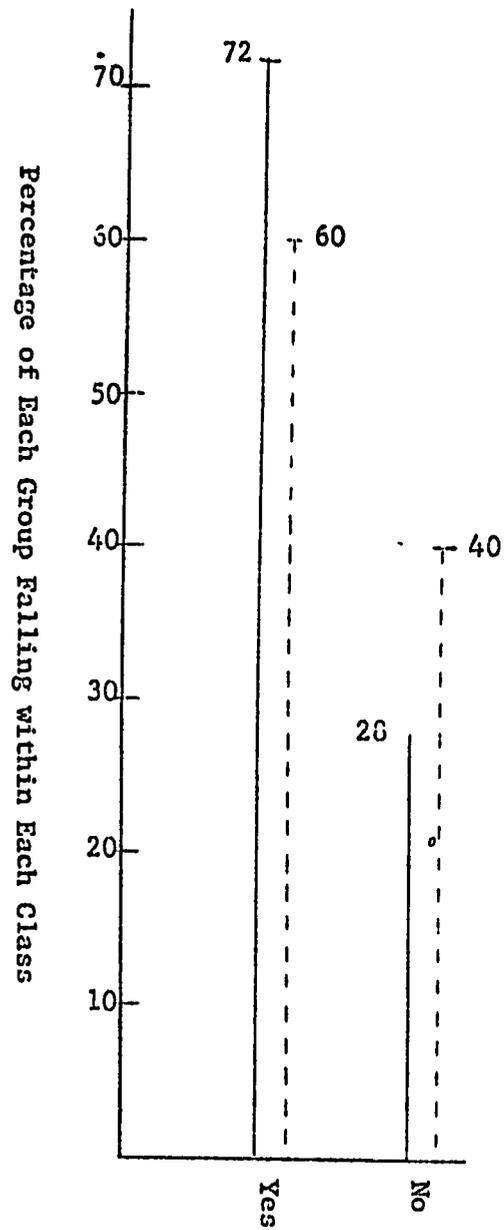
APPENDIX B, No. 7: The Distribution of Variable x_8 (The Appraisal of the Value of the Farm by the BFAP Fieldman) for Delinquent and Non-delinquent Borrowers



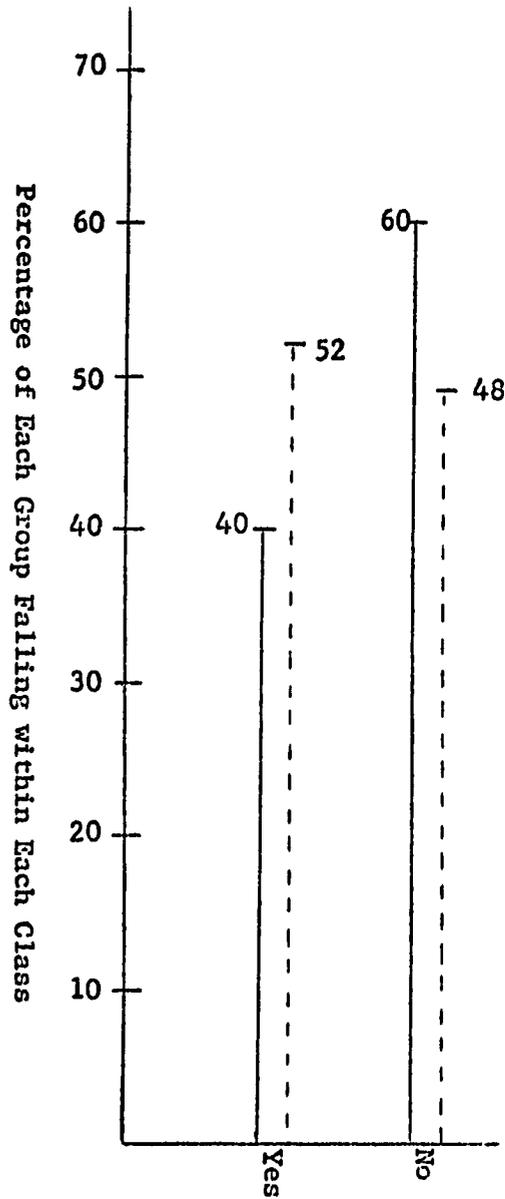
APPENDIX B, No. 8: The Distribution of Variable x_{30} (The Appraisal of the Value of the Farm by the Borrower) for Delinquent and Non-delinquent Borrowers.



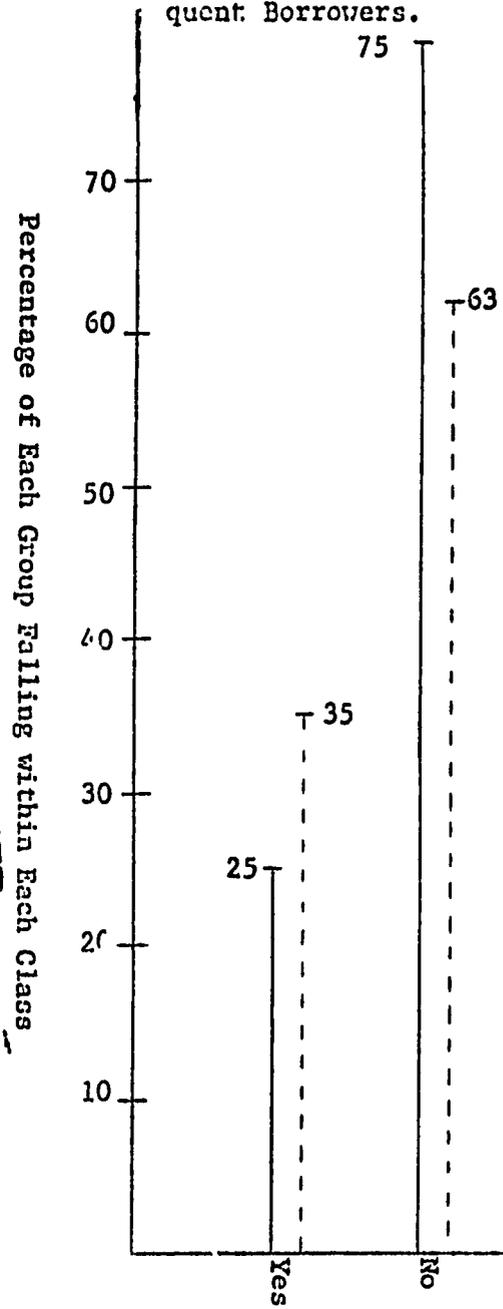
APPENDIX B, No. 9: The Distribution of Variable x8
(Does the Borrower Live on the Farm)
for Delinquent and Non-delinquent Borrowers.



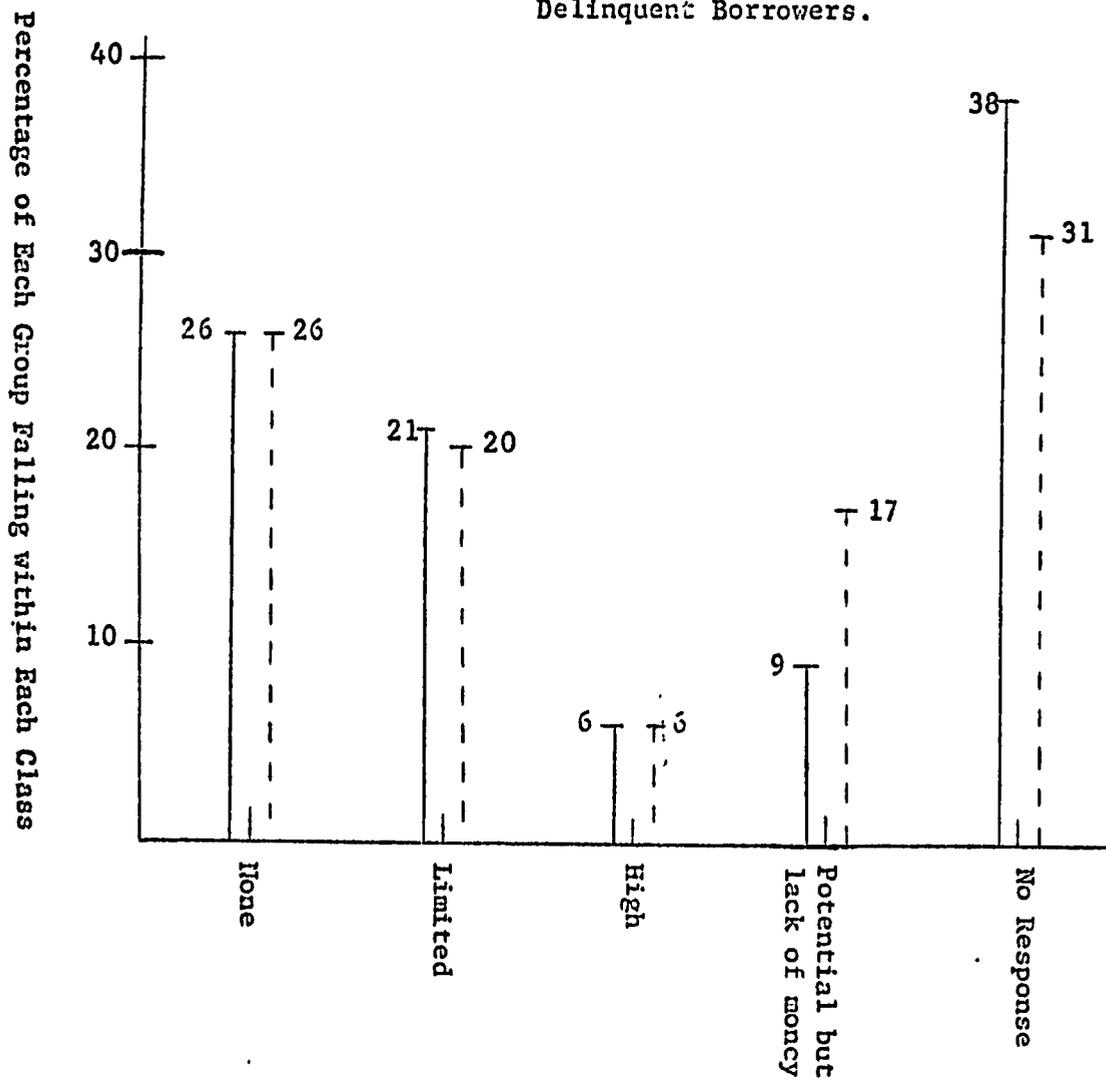
APPENDIX B, No. 10: The Distribution of Variable x_{11} (Did the Borrower Have Unexpected Expenses in 1964-65) for Delinquent and Non-delinquent Borrowers.



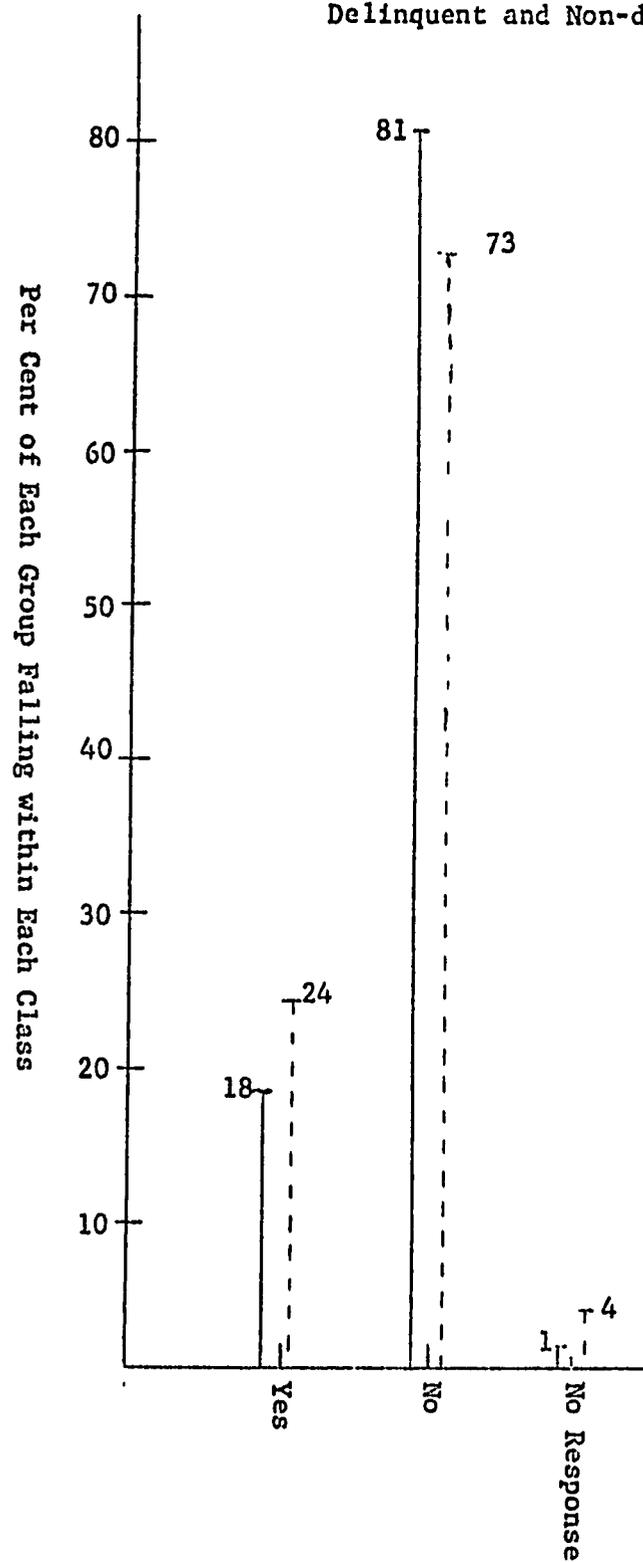
APPENDIX B, No. 11: The Distribution of Variable x_{12} (Did the Borrower Have Off-farm Employment) for Delinquent and Non-delinquent Borrowers.



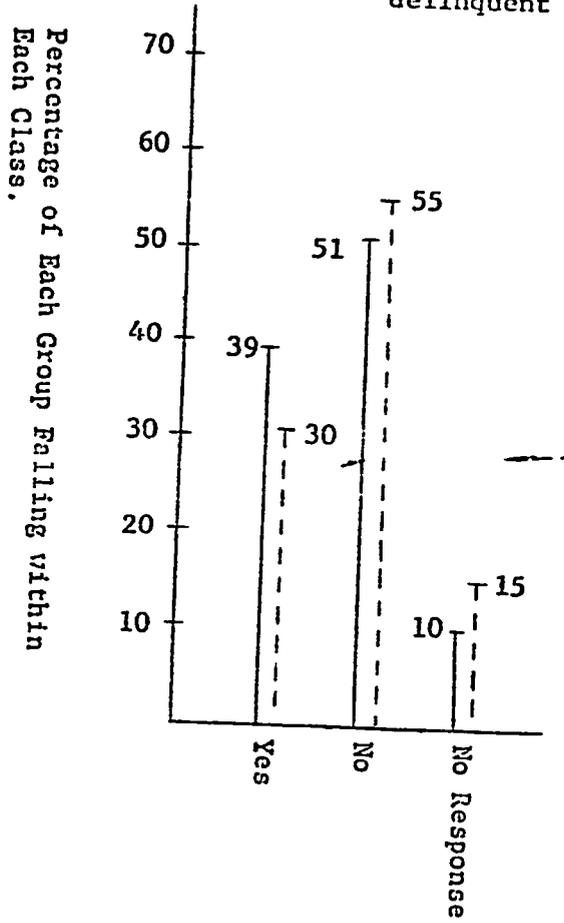
APPENDIX B NO. 12: The Distribution of Variable x_{13}
 (What is the Potential of the Unused
 Land) for Delinquent and non-
 Delinquent Borrowers.



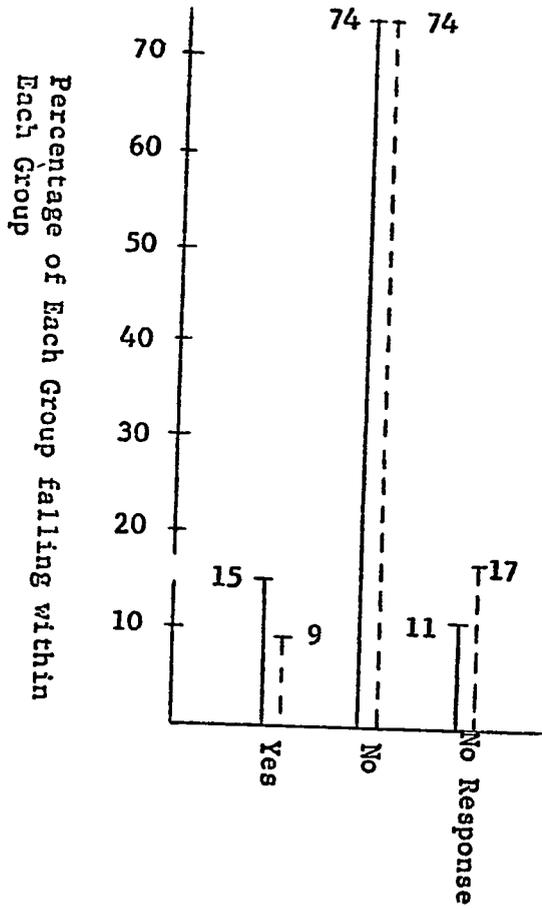
APPENDIX B, No. 13: The Distribution of variable x_{14}
(Does the borrower have loans from
sources other than the BFAP) for
Delinquent and Non-delinquent Borrowers.



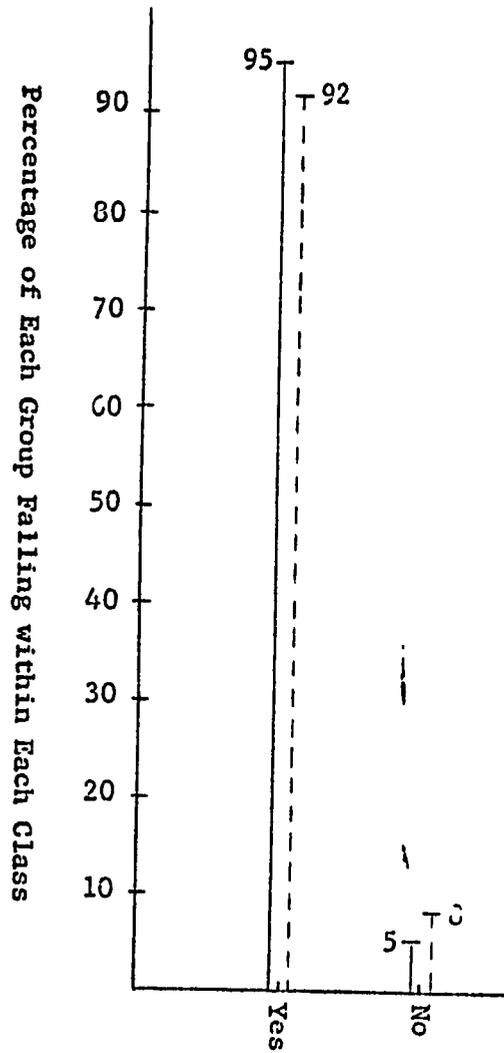
APPENDIX B, No. 14: The Distribution of Variable x_{15} (Does the Borrower Use Veterinary Products or Services) for Delinquent and Non-delinquent Borrowers.



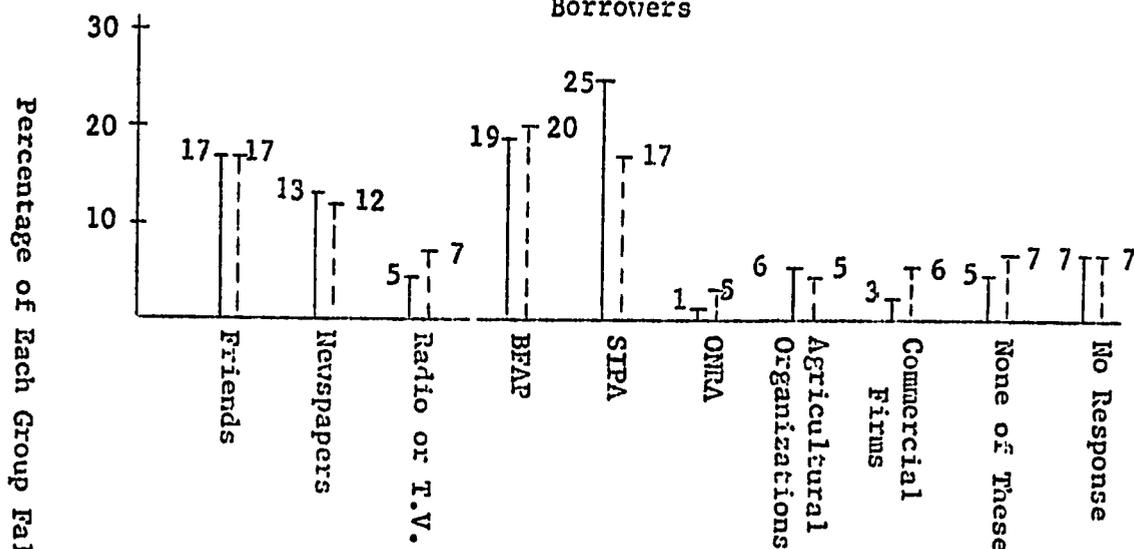
APPENDIX B, No. 15: The Distribution of Variable x_{16} (Does the Borrower Use Supplemented Feeds) for Delinquent and Non-delinquent Borrowers.



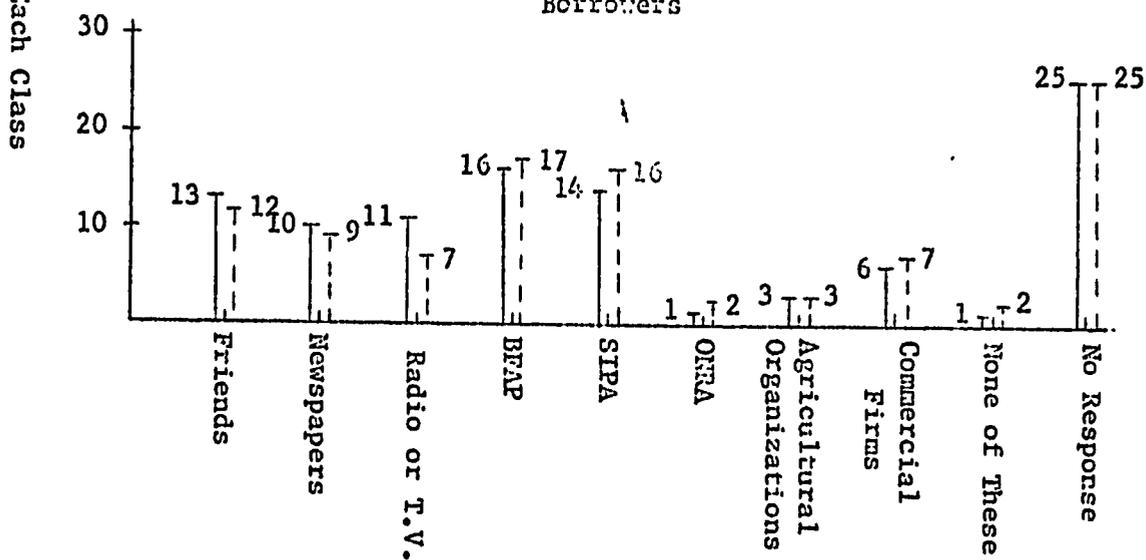
APPENDIX B, No. 16: The Distribution of Variable x18
 (Does the Borrower Administer his Farm
 Directly) for Delinquent and Non-
 delinquent Borrowers.



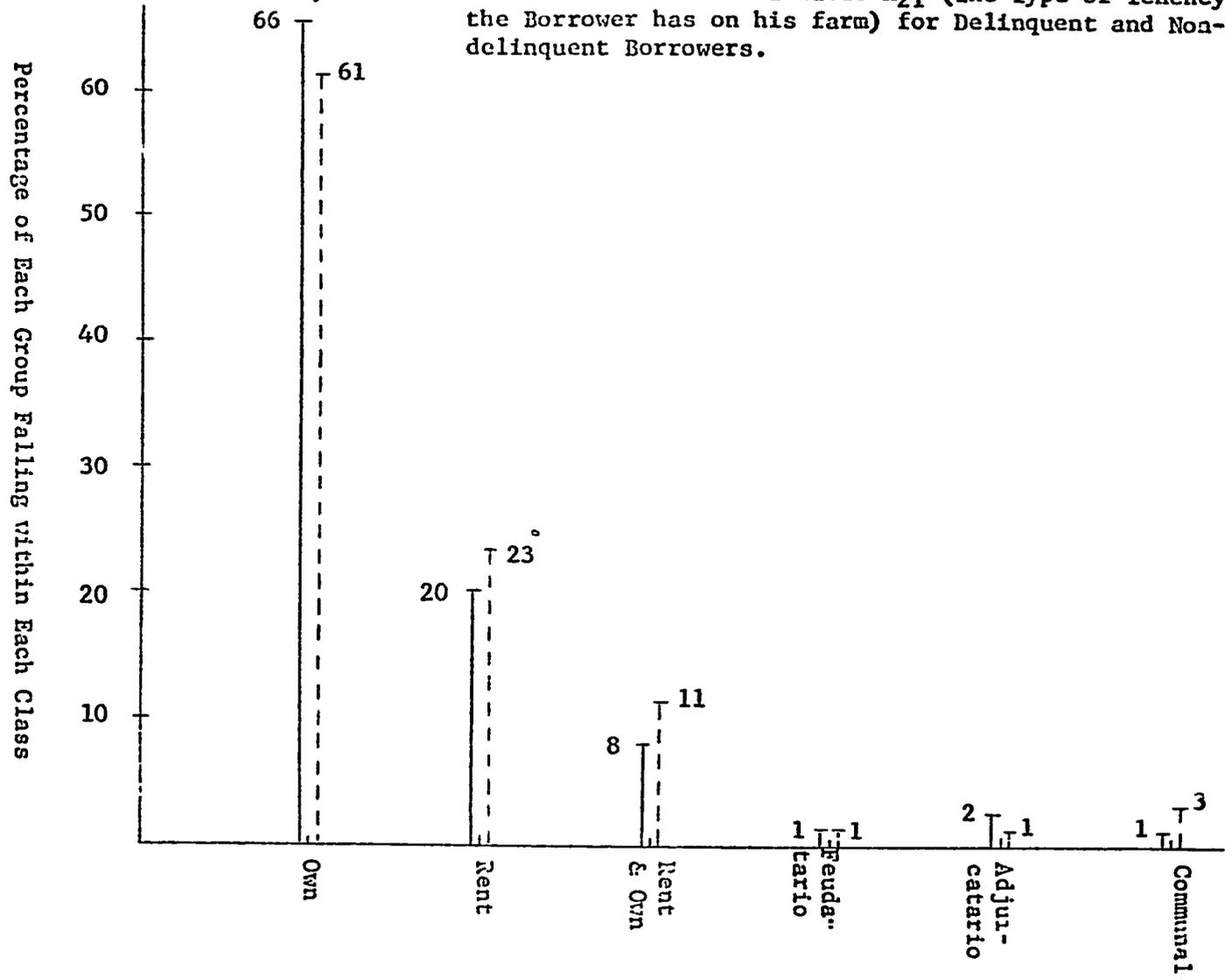
APPENDIX B, No. 17: The Distribution of Variable x20
(What is the Borrowers' Primary Source of Agricultural Information) for Delinquent and Non-delinquent Borrowers



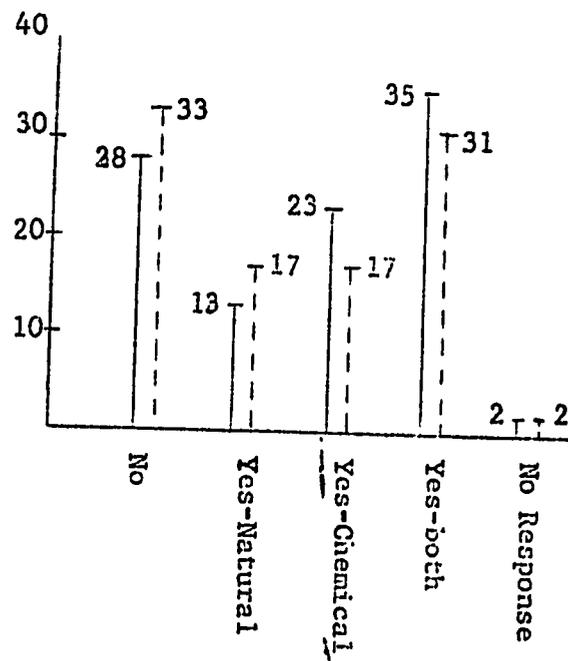
APPENDIX B, No. 18: The Distribution of Variable x39
(What is the Borrowers' Secondary Source of Agricultural Information) for Delinquent and Non-delinquent Borrowers



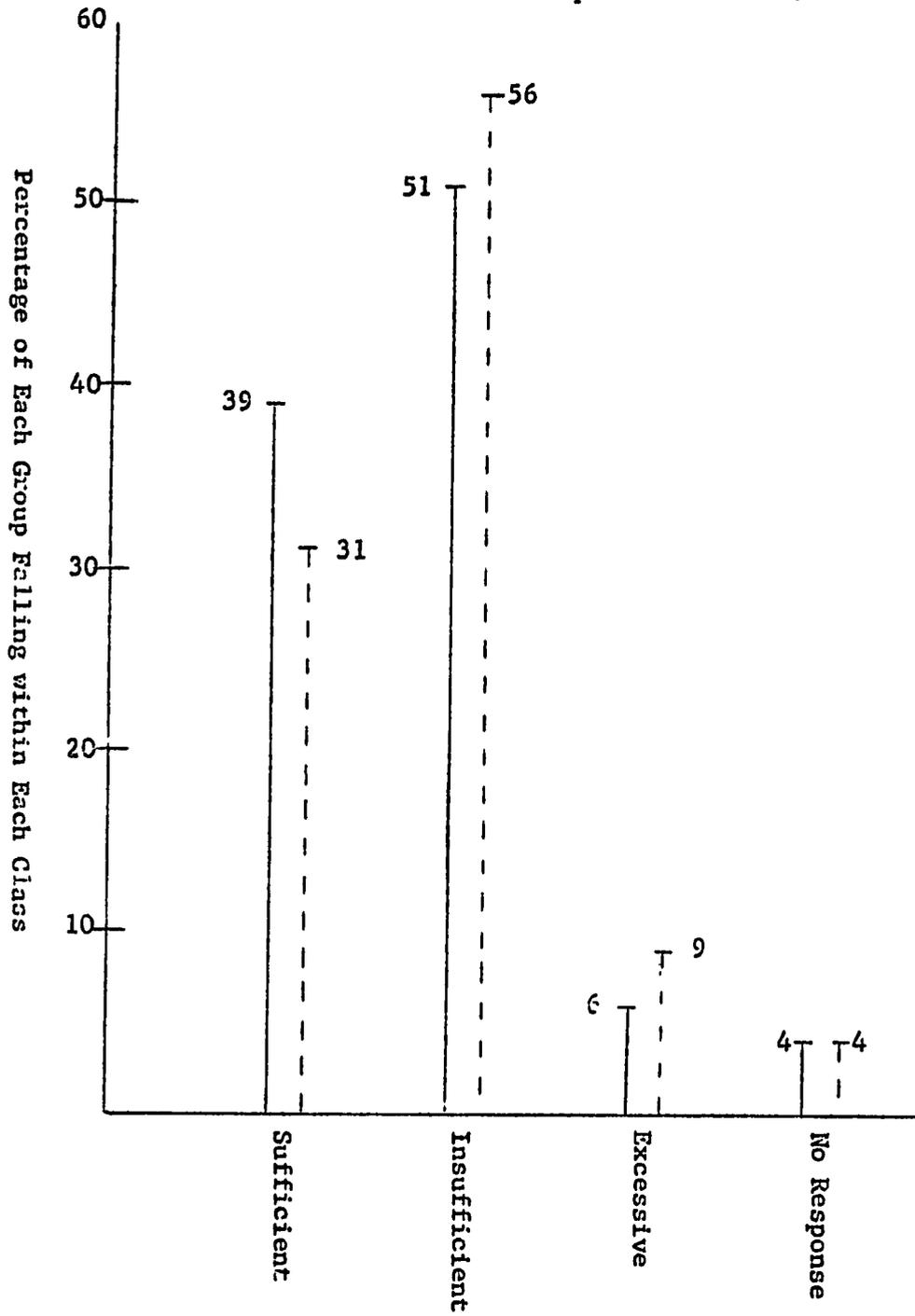
APPENDIX B, No. 19: The Distribution of Variable x₂₁ (The Type of Tenancy the Borrower has on his farm) for Delinquent and Non-delinquent Borrowers.



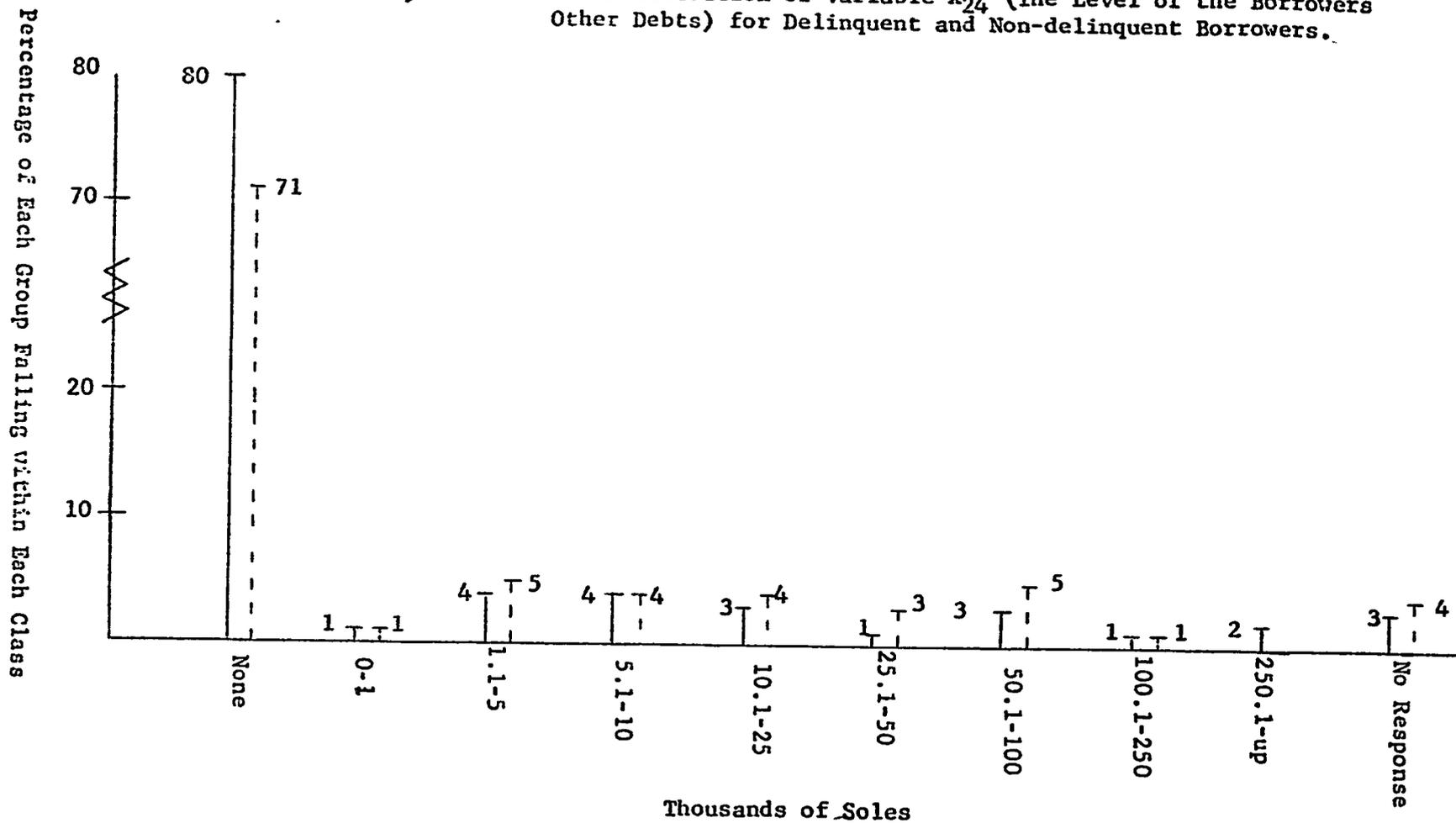
APPENDIX B, No. 20: The Distribution of Variable x_{22}
(Does the Borrower Use Fertilizer
and Type) for Delinquent and Non-
delinquent Borrowers.



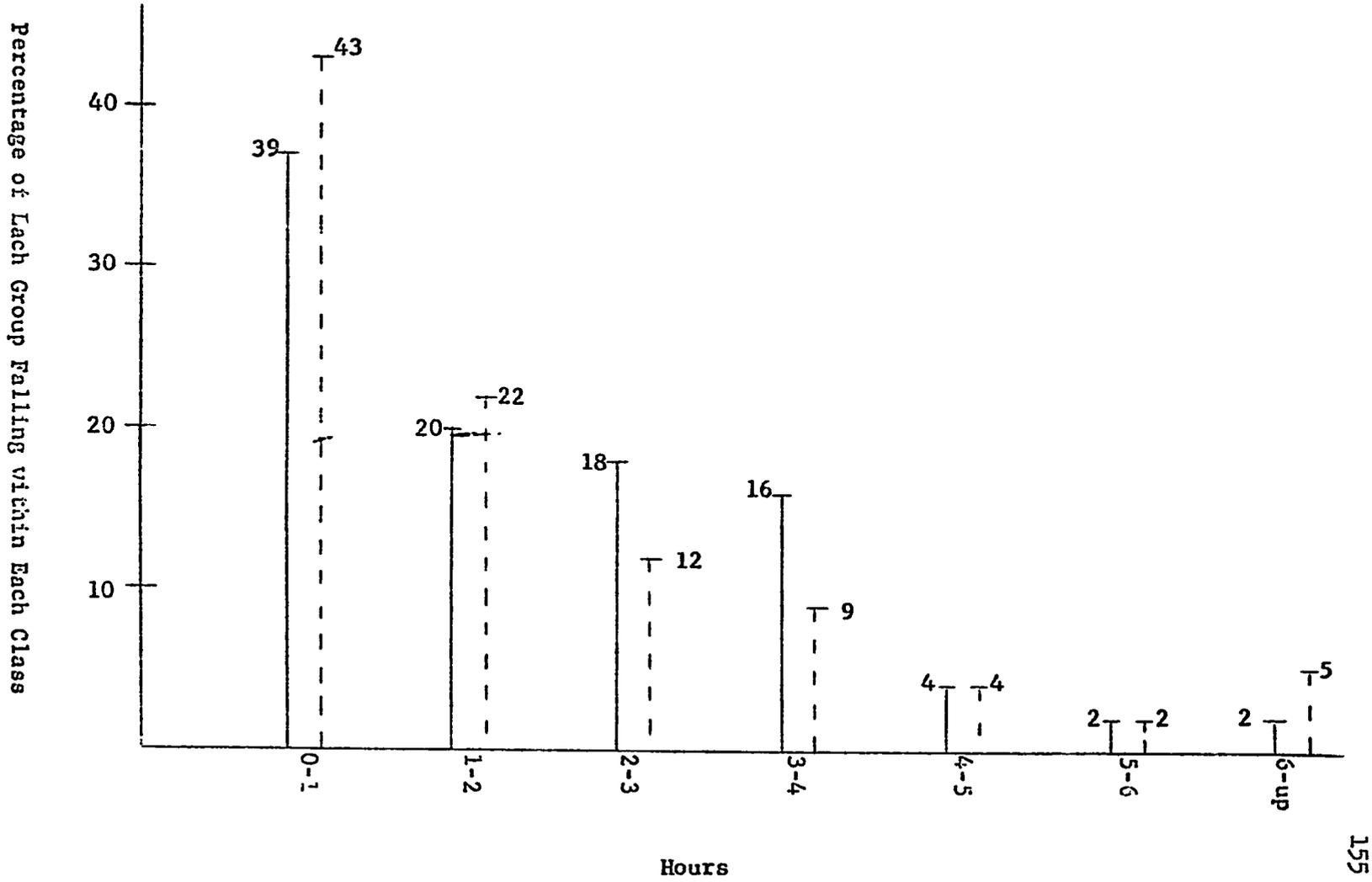
APPENDIX B, No. 21: The Distribution of Variable x₂₃
(The Adequacy of Rainfall in the
Borrowers Area) for Delinquent and
Non-delinquent Borrowers.



APPENDIX B, No. 22: The Distribution of Variable x_{24} (The Level of the Borrowers Other Debts) for Delinquent and Non-delinquent Borrowers.

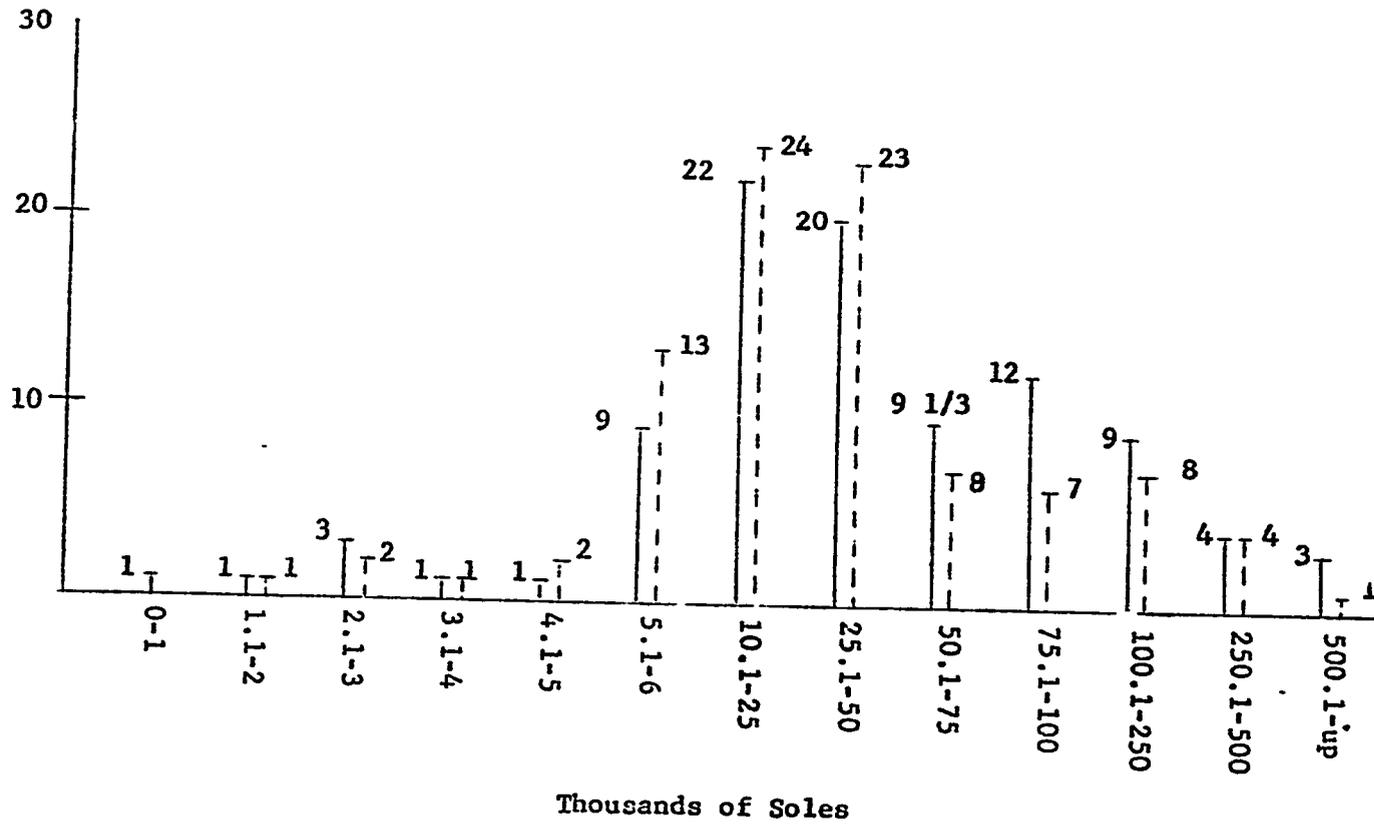


APPENDIX B, No1 23: The Distribution on Variable x₂₅ (The Distance from the Farm to B F A P Office in Hours) for Delinquent and Non-delinquent Borrowers.

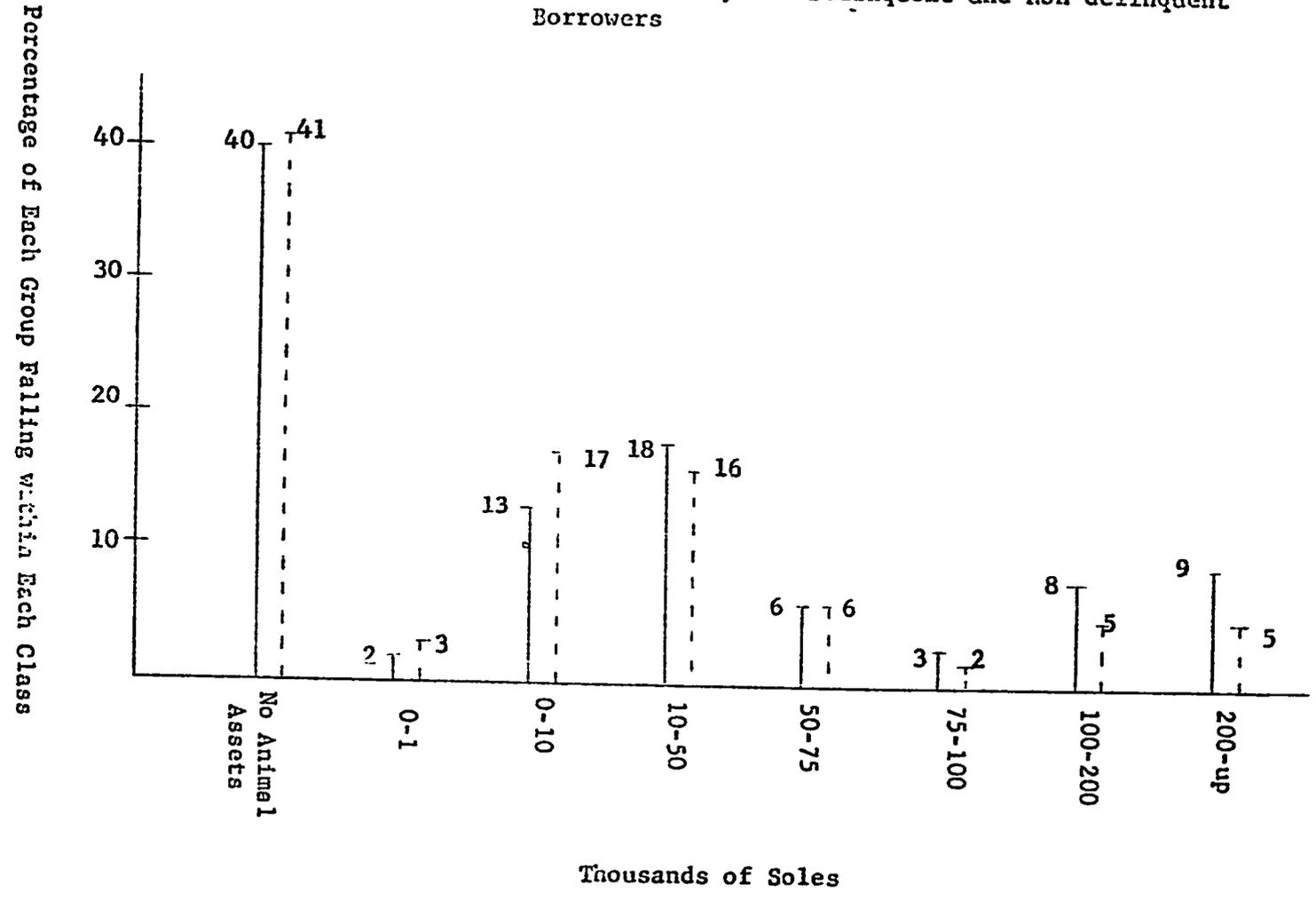


APPENDIX B, No. 24: The Distribution of Variable x29 (The Amount of the Borrower's present loan) for delinquent and Non-delinquent Borrowers.

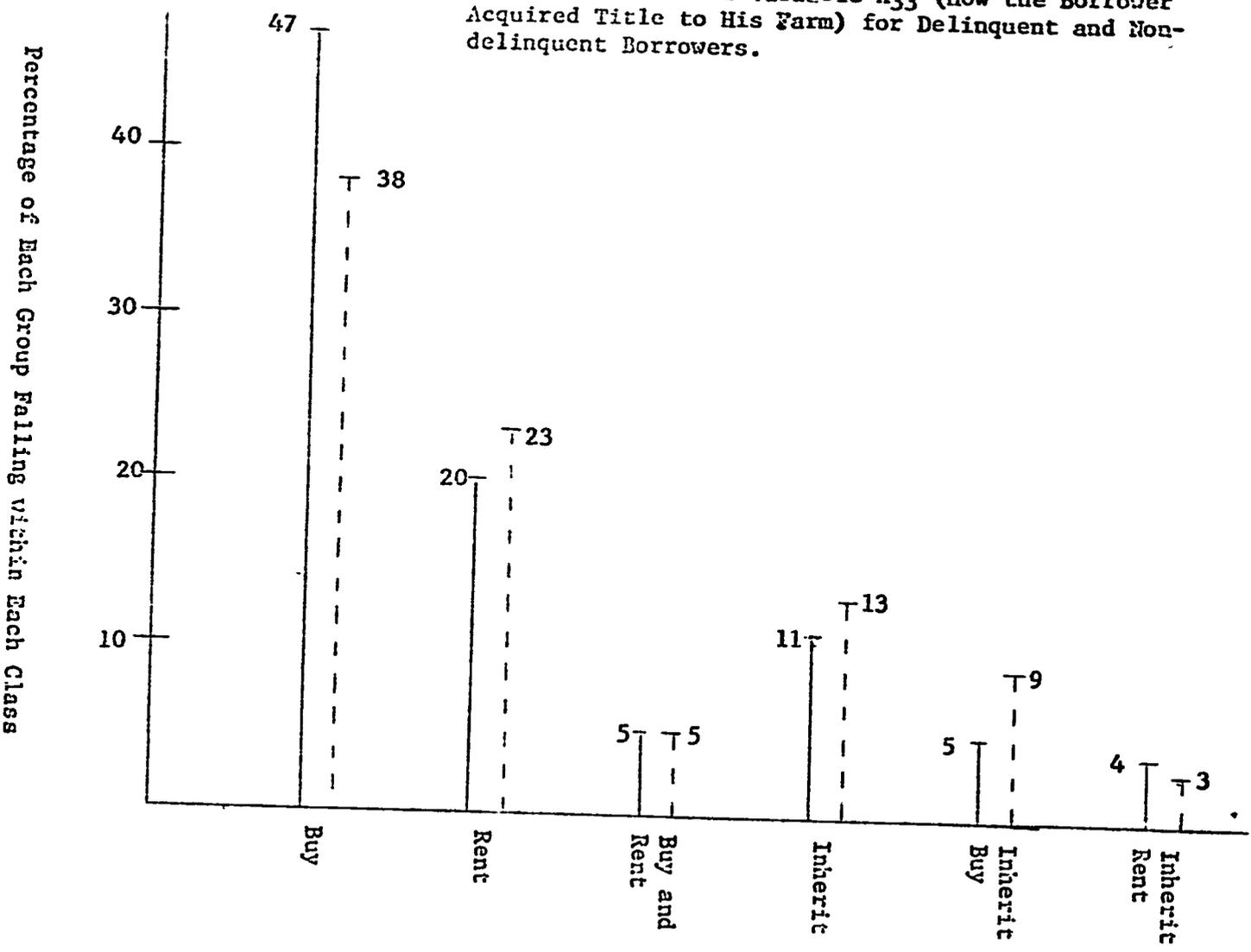
Percentage of Each Group Falling within Each Class



APPENDIX B, No. 25: The Distribution of Variable x32 (the Borrowers' Animal Assets) for Delinquent and Non-delinquent Borrowers

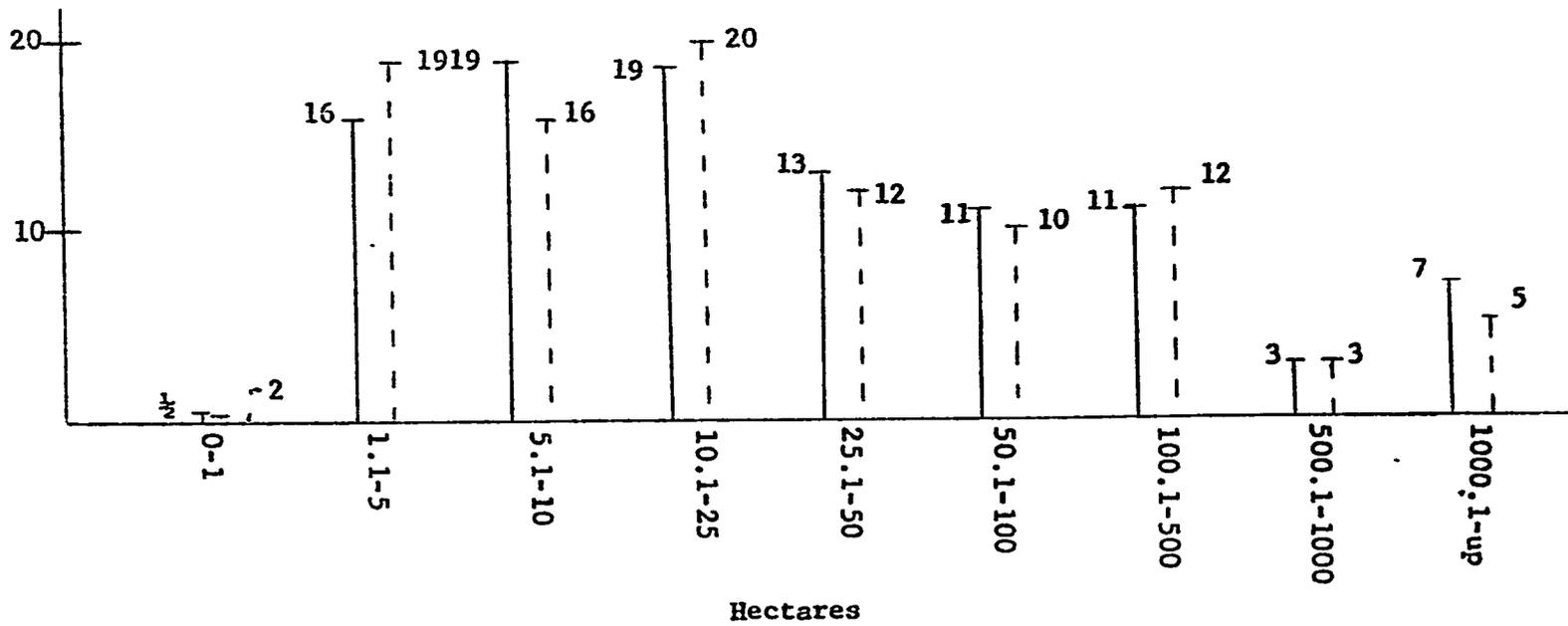


APPENDIX B, No. 26: The Distribution of Variable x33 (How the Borrower Acquired Title to His Farm) for Delinquent and Non-delinquent Borrowers.



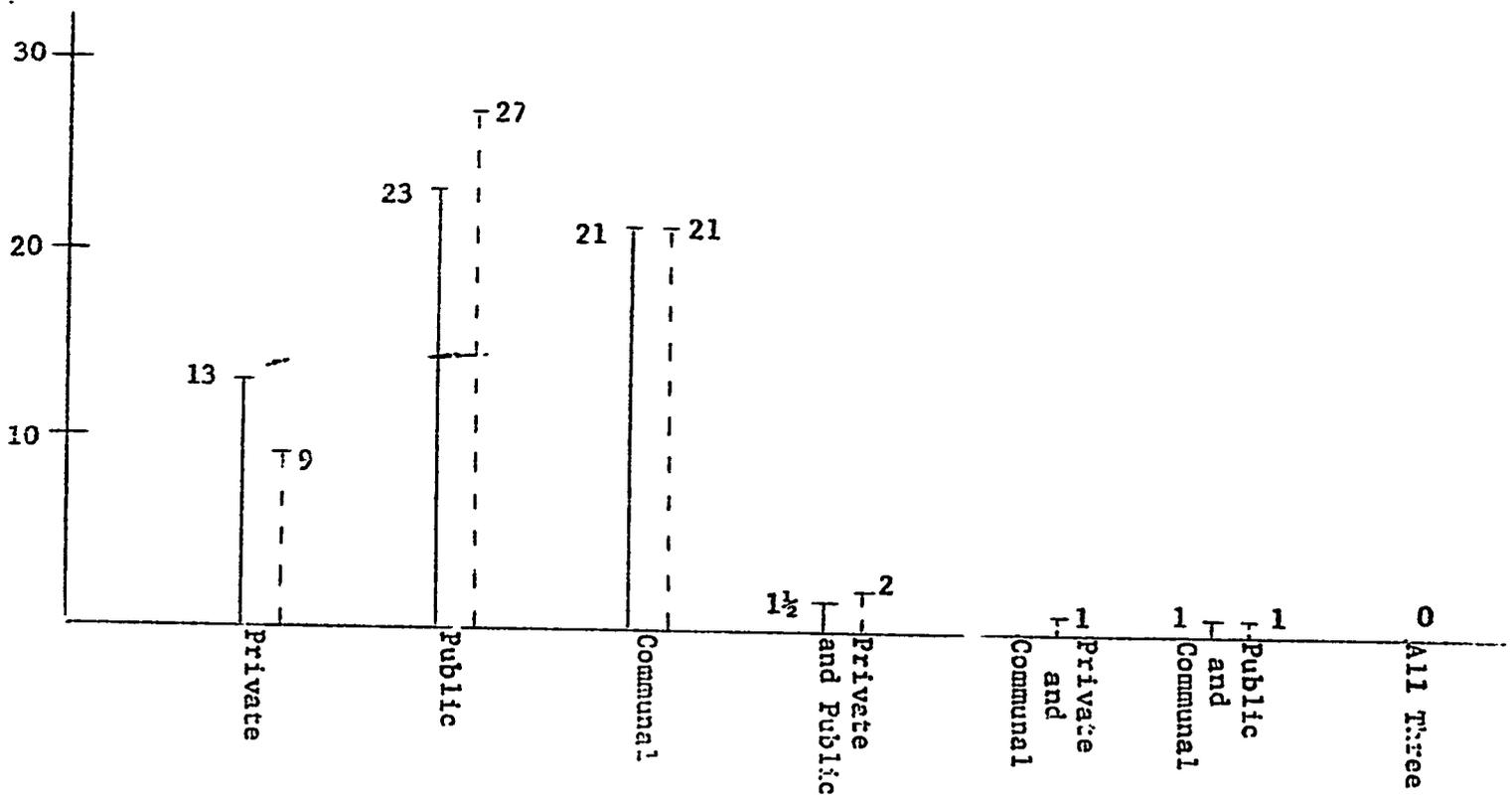
APPENDIX B, No. 27: The Distribution of Variable x_{34} (The Size of the Farm in Hectares) for Delinquent and Non-delinquent Borrowers

Percentage of Each Group Falling within Each Class

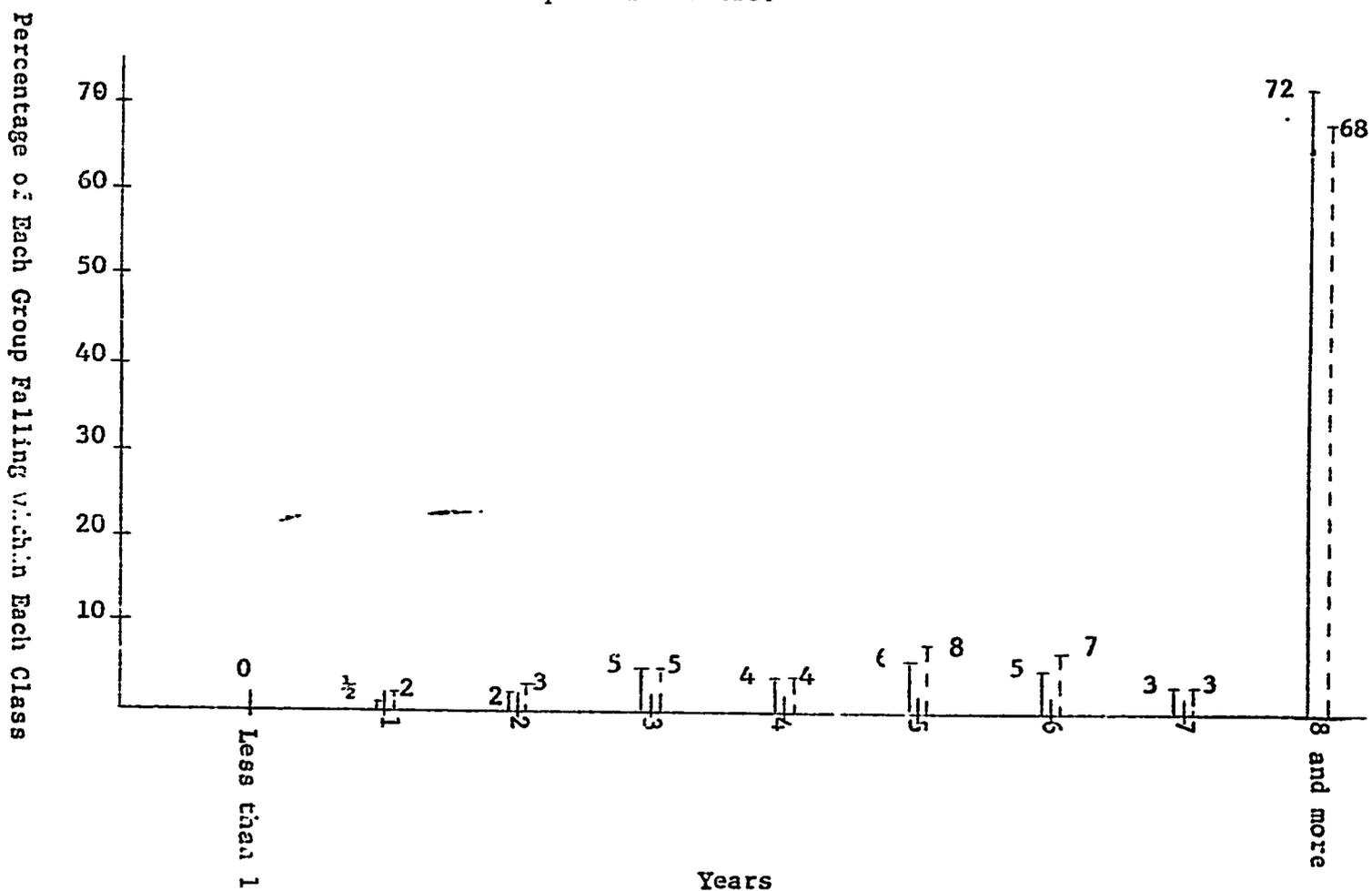


APPENDIX B, No. 28: The Distribution of Variable x₃₆ (The Type of Irrigation System as to Ownership) for Delinquent and Non-delinquent Borrowers.

Percentage of Each Group Falling within Each Class

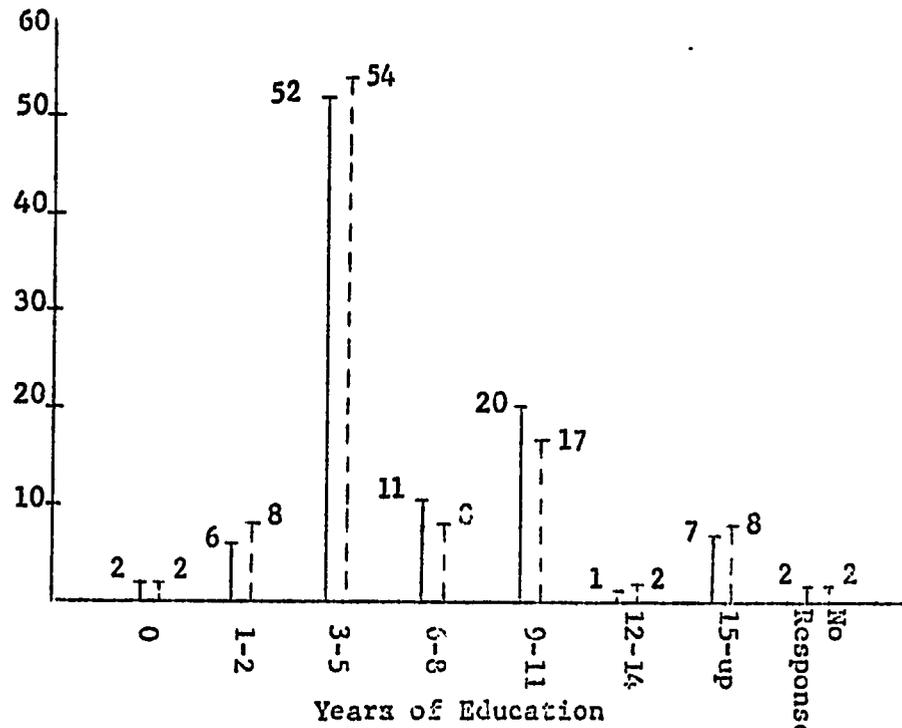


APPENDIX B, No. 29: The Distribution of Variable x37 (The Number of Years the Borrower Has Worked His Farm) for Delinquent and Non-delinquent Borrowers.

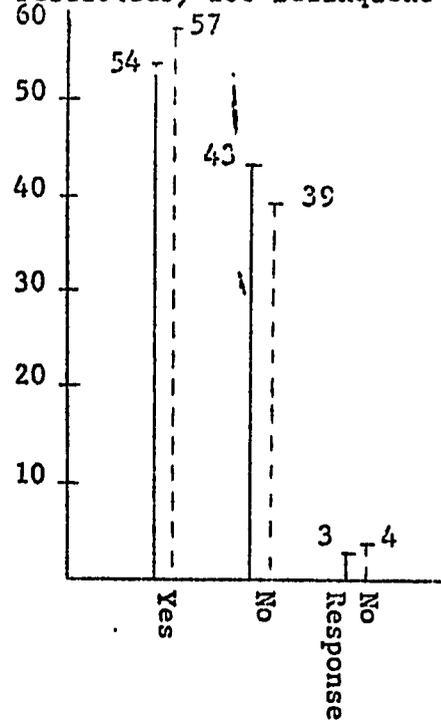


APPENDIX B, NO. 30: The Distribution of Variable x_{40} (The Borrowers Level of Education) for Delinquent and Non-Delinquent Borrowers.

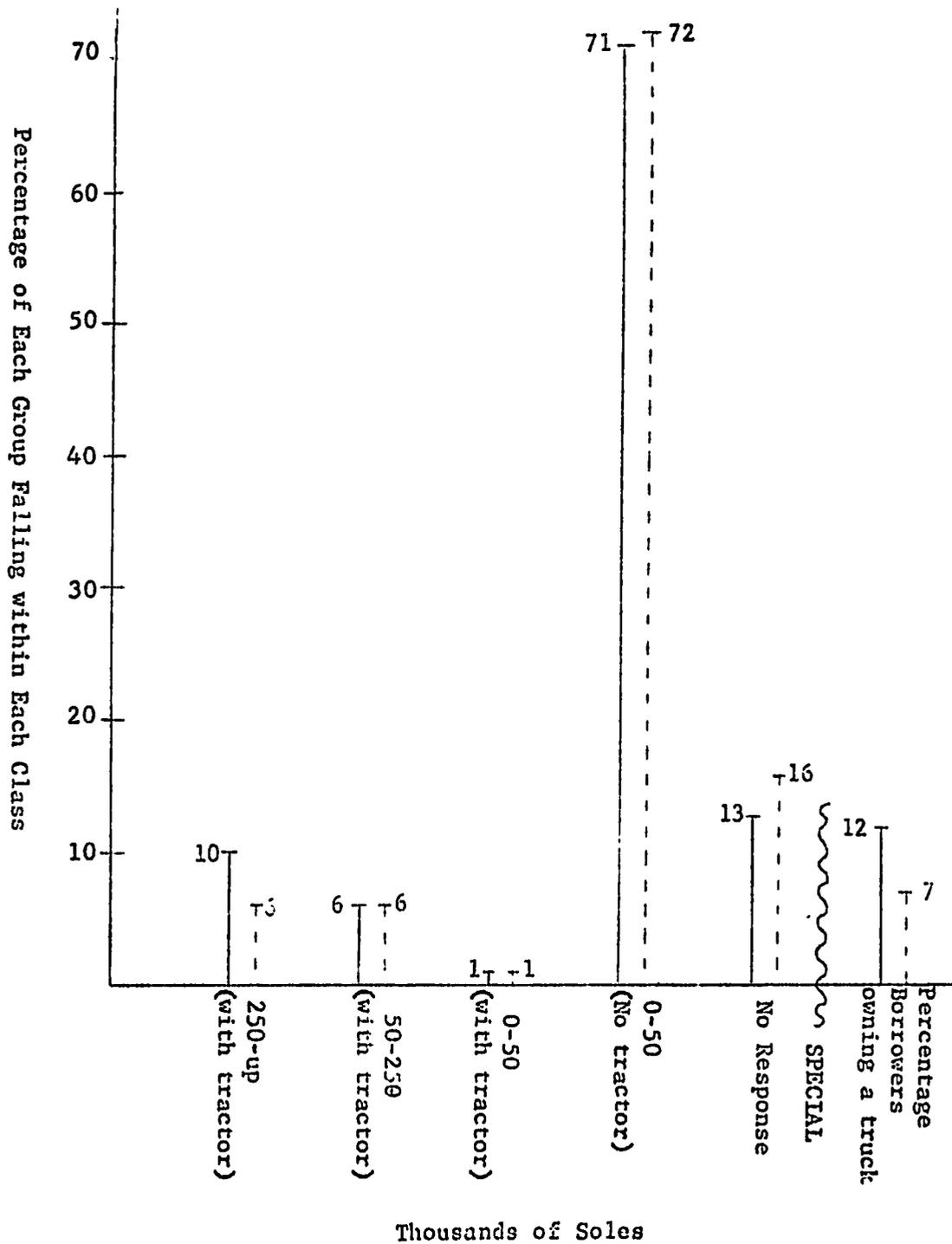
Percentage of Each Group Falling within Each Class



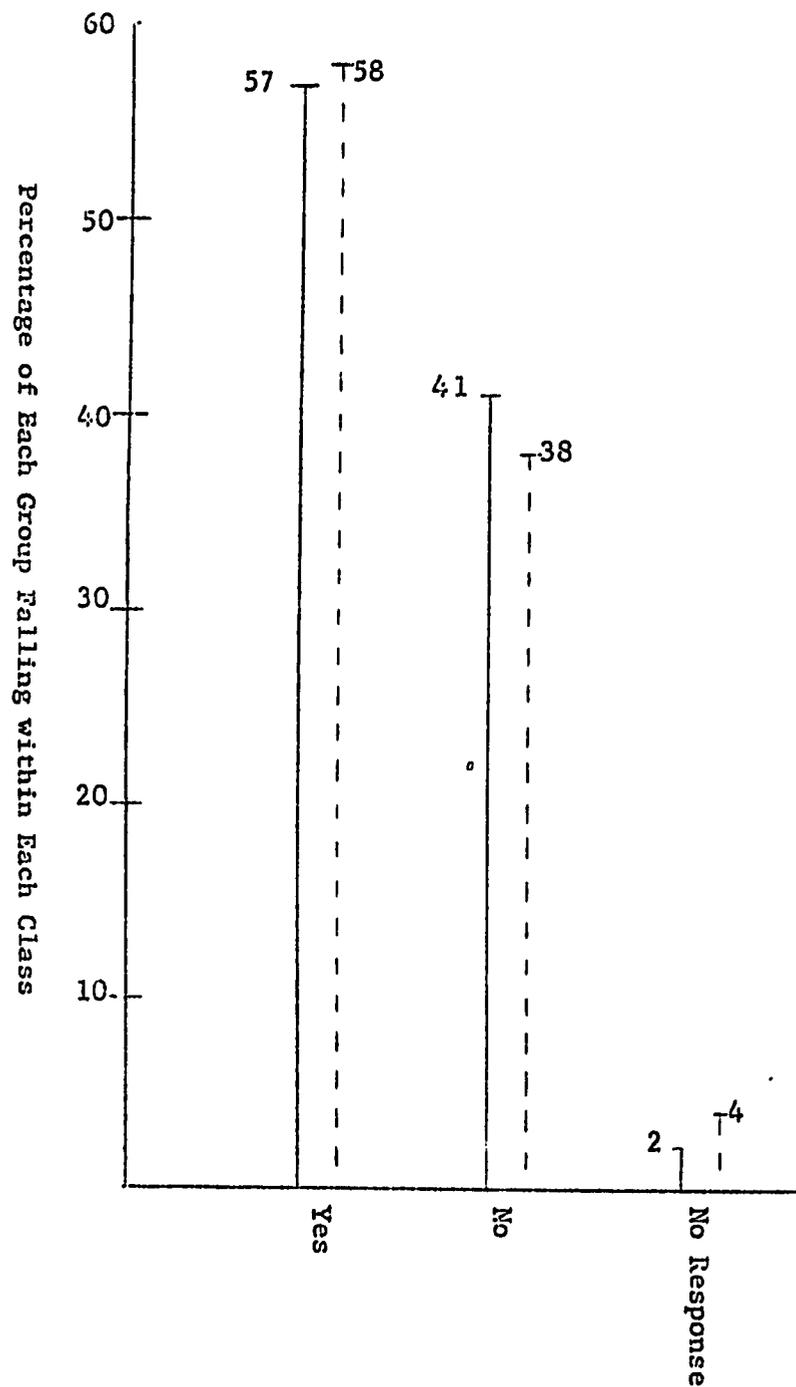
APPENDIX B, No. 31: The Distribution of Variable x_{44} (Does the Borrower Use Pesticides) for Delinquent and Non-Delinquent Borrowers



APPENDIX B, No. 32: The Distribution of Variable x41 (The Borrower's Capital Assets) for Delinquent and Non-delinquent Borrowers. (Special Insert of "Ownership of a Truck.")



APPENDIX B, No. 33: The Distribution of Variable x48 (Does the Borrower Have Irrigation System) for Delinquent and Non-delinquent Borrowers.



APPENDIX C

APPENDIX C

APPENDIX C: The forty eight Variables from the BFAP Borrower Survey Tested for Significance in Association with Delinquency of Agricultural credit and chi-square Values for the Twenty-two Nonsignificant Variables

X ₁	Year the loan was granted
X ₂	Age of the borrower
X ₃	The number of BFAP loans in past three years
X ₄	Total income for the 1964-1965 production period
X ₅	Savings account
X ₆	Climatic problems
X ₇	Adequacy of water for production
X ₈	Farm appraisal by the BFAP fieldman
X ₉	Interest rate of the loan
X ₁₀	Borrowers place of residency
X ₁₁	Unexpected expenses during the 1965 1966 production period
X ₁₂	Off farm employment
X ₁₃	Estimated potential of unused land
X ₁₄	Other loans besides BFAP loan
X ₁₅	Use of veterinarian products or services
X ₁₆	Use of supplement feeds
X ₁₇	Part of income goes to the family
X ₁₈	Administer farm directly
X ₁₉	The distance from the farm to major roads in kilometers
X ₂₀	Primary source of agricultural information

X ₂₁	Type of tenancy
X ₂₂	Use of fertilizer and type used
X ₂₃	Adequacy of rainfall
X ₂₄	Amounts of other debts
X ₂₅	Distance to the FBAP office in hours
X ₂₆	Objective of the loan
X ₂₇	Distance to major markets in hours
X ₂₈	Duration of the loan
X ₂₉	Amount of the loan
X ₃₀	Farm appraisal by the owner
X ₃₁	The distance to major roads in hours
X ₃₂	Animal assets
X ₃₃	Acquisition of title
X ₃₄	Size of the farm in hectares
X ₃₅	Types of transportation used
X ₃₆	The type of irrigation system as to ownership
X ₃₇	Years working the farm
X ₃₈	The number of separate plots over one kilometer apart
X ₃₉	Secondary source of agricultural information
X ₄₀	The borrower's level of education
X ₄₁	Capital assets and power source
X ₄₂	Race
X ₄₃	Married
X ₄₄	Use of pesticides
X ₄₅	Member of some agricultural organization

X₄₆ Roads passable year around

X₄₇ Speak Spanish

X₄₈ Irrigation

Variables Not Showing Significance
at the 20% Level

Variable	Degrees of Freedom	Chi-Square Value
X ₂₇ Distance to major market (hours)	29	31.52977
X ₂₈ Duration of the loan	26	22.25924
X ₂₉ Amount of loan	14	17.43834
X ₃₀ Farm appraisal by owner	8	10.26116
X ₃₁ Distance to road (hours)	9	10.08319
X ₃₂ Animal assets	7	9.56721
X ₃₃ Acquisition of title	8	9.07695
X ₃₄ Size of farm (Hectares)	8	8.02598
X ₃₅ Type of transportation used	8	6.94112
X ₃₆ Type of irrigation system	6	6.60927
X ₃₇ Years working farm	7	5.82883
X ₃₈ Number of plots in farm	8	5.55900
X ₃₉ Secondary source of information	8	5.33918
X ₄₀ Level of education	6	4.13442
X ₄₁ Capital assets and power source	3	3.30329
X ₄₂ Race	4	1.37131
X ₄₃ Married	1	1.12595
X ₄₄ Use of pesticides	1	1.17750
X ₄₅ Member of agriculture organization	1	1.10777
X ₄₆ Road passable year around	1	0.84604
X ₄₇ Speak Spanish	1	0.31866
X ₄₈ Irrigation	1	0.31117

Books

- , Demographic Yearbook 1963, New York, the United Nations, 1964..
- , Statistical Yearbook 1965, New York, The United Nations, 1966.
- Agarwala, A. N. and S. P. Singh (Editors), The Economics of Underdevelopment, New York, Oxford University Press, 1963.
- Cole, J. P., Latin America: An Economic and Social Geography, Washington, D.C. Sutterworths, 1965.
- Currie, Lauchlin, Accelerating Development: The Necessity and the Means, New York, McGraw Hill Book Company, 1966.
- Empresa de Mensajero Agricola, S. H., (Ed.), Almanaque Agropecuario del Peru, Lima, Peru, 1959.
- Empresa de Mensajero Agricola, S. A., (Ed.) Almanaque Agropecuario del Peru, Lima, Peru, 1960.
- Empresa de Mensajero Agricola, S. A., (Ed), Almanaque Agropecuario del Peru, Lima, Peru, 1965.
- Firth, Raymond and Yancy, B. S., Capital, Saving and Credit in Peasant Societies, Chicago, Aldine Publishing Company, 1964.
- Furtado, Celso, Development and Underdevelopment, Berkley, University of California Press, 1964.
- , The Grolier Society, (Ed.) Latin America and General Articles, New York, Grolier Inc., 1965.
- Heath, Dwight S. and Adams, Richard R., (Ed.) Contemporary Cultures and Societies of Latin America, New York, Random House, 1965.
- Heady, Earl O. (Ed), Economic Development of Agriculture, Ames Iowa, Iowa State University Press, 1965.
- Kitzinger, U. W., The Politics and Economics of European Integration, New York, Frederick A. Praeger, 1966.

- Paddock, William and Paddock, Paul, Hungry Nations, Boston, Little, Brown and Company, 1964.
- Schultz, Theodore W., Economic Crisis in World Agriculture, Ann Arbor, University of Michigan, Press, 1965.
- Schultz, Theodore W., Transforming Traditional Agriculture, New Haven, Yale University Press, 1965.

Reports

- Banco Central de Reserva del Peru, Boletín del Banco de Reserva del Peru, Numbers 410, 411, 412, 413, and 414, Lima, 1966.
- Banco Central de Reserva del Peru, Memoria, Lima, 1964.
- Banco de Fomento Agropecuario del Peru, Instrucciones Sobre la Zonificación y Sectorización Territorial con Fines Crediticios, Lima, 1966.
- Banco de Fomento Agropecuario del Peru, Memoria, 33^o Ejercicio, Lima, 1964.
- Instituto Nacional de Promoción Industrial y Banco Industrial del Peru, Situación de la Industria Peruana en 1964, Prepared by Research Division BIP, Lima, 1965.
- Ministerio de Agricultura. Estadística Agraria 1963. Lima, Prepared by Convenio de Cooperación, Técnica, 1964.
- Ministro de Hacienda y Comercio. Plan Nacional de Desarrollo Económico y Social del Peru 1962-1971, Tomo I, Mexico City, Organization of American States, 1962.
- Organization of American States, Encuesta de la Tierra y Desarrollo Socio Económico del Sector Agrícola Peruano, Prepared by Comité Interamericano de Desarrollos Agrícolas, Washington, D.C., 1966.
- Organization of American States, Índices de Vida Natural en el Peru, Lima, Prepared by Zona Andina, 1960.
- Servicio de Investigación y Promoción Agraria, Latitud, Longitud y Alturas de Áreas Agrícolas Distritales y Provinciales por Departamentos, Lima, 1966.

United States Department of Agriculture, Peru Market and Competition for U.S. Farm Products, Washington, D.C., Economic Research Service, Foreign Regional Analyses Division, 1965.

Articles

Mann, Fred L. and Cabrera, Raul Munoz, Legal Research Series on Agricultural Marketing Structures in Peru--Price Policies, Iowa Universities Mission; Lima, 1966.

Mathia, Gene A., "Un Estudio Economico del Transporte pro Camiones en el Peru," Reprint from Analisis Cientificos, Vol. 11, No. 3, Julio Agosto-Septiembre, 1964, Lima,

Unpublished Materials

Agency for International Development, AID Loan to SIPA, Justification, (Unpublished unclassified report), Prepared by US/AID, Peru, Lima, 1966.

Remolina, Ramon, Banco de Fomento Agro pecuario del Peru Circular, Internal unpublished communique) Lima, November, 4, 1963..

Chen, Hsing-Yiu, Structure and Productivity of Capital in the Agriculture of Peru and their Policy Implications to Agricultural Finance (Unpublished Doctoral Dissertation), The Ohio State University, Columbus, Ohio, 1967.

Rojas, Gentil, Economic Analysis of the Ecuadorian Development Banking System (Unpublished Masters Thesis), The Ohio State University, Columbus, Ohio, 1965.