

AN ANALYSIS OF AGRICULTURAL
CREDIT MARKETS IN VIHIGA DIVISION
KAKAMEGA DISTRICT

BY

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A Thesis
Submitted to the Department of Agricultural
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Master of Science in Agricultural Economics

1990

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DECLARATION

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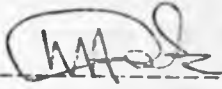
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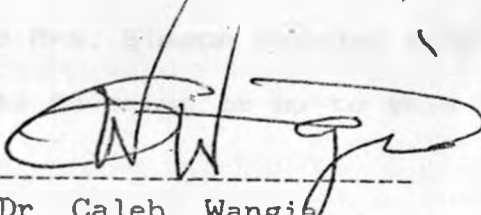
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TABLE OF CONTENTS
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TABLE OF CONTENTS

	<u>Page</u>
Title -----	i
Declaration -----	ii
Acknowledgement -----	iii
Table of Contents -----	iv
List of Tables -----	vii
List of Appendices -----	ix
List of Figures -----	ix
Abbreviations -----	x
Abstract -----	xi
Chapter One: INTRODUCTION -----	1
1.1 Background -----	1
1.2 The Problem Statement -----	8
1.3 Justification -----	11
1.4 Objectives of the Study -----	12
1.5 Hypotheses Tested -----	12
1.6 Location of the Study Area -----	13
1.7 Agricultural Credit Markets in Kenya -----	18
1.7.1 Sources of Informal Credit in Kenya -----	19
1.7.2 Sources of Formal Credit in Kenya -----	20
1.8 Agricultural Lending Requirements from Formal Lenders -----	21
Chapter Two: LITERATURE REVIEW -----	23

<u>Table of Contents Cont'd</u>	<u>Page</u>
Chapter Three: METHODOLOGY -----	43
3.1 Sources of Data -----	43
3.2 Sample and Sampling Plan -----	43
3.3 Types of Data and Methods of Data collection -----	44
3.3.1 Primary Data -----	45
3.3.2 Secondary Data -----	46
3.4 Methods of Data Analysis -----	47
3.4.1 Descriptive Statistics -----	47
3.4.2 Regression Analyses -----	47
3.4.3 Definition of the Variables Included in the Model -----	51
3.5 Problems of Measurement and Estimation -----	54
3.5.1 Multicollinearity -----	54
3.5.2 Omission of Variables -----	56
3.5.3 Measurement Errors -----	58
Chapter Four: RESULTS AND DISCUSSION -----	59
4.1 Agricultural Credit Markets in Vihiga Division -----	59
4.1.1 Agricultural Credit Market Operations -----	59
4.1.1.1 Loan Application Procedures ---	60
4.1.1.2 Zones of Credit Lender Operations -----	62
4.1.1.3 Terms and Conditions for the Types of Loans Granted by the Credit Institutions -----	62
4.1.1.3.1 Collateral for Loans-----	64

<u>Table of Contents Cont'd</u>	<u>Page</u>
4.1.1.3.2 Grace Period -----	66
4.1.1.3.3 Interest Rate -----	67
4.1.1.3.4 Form in which Credit was Granted -----	68
4.1.1.4 Terms and Conditions for Informal Credit -----	69
4.1.1.4.1 Collateral for Loans -----	70
4.1.1.4.2 Interest Rate -----	71
4.1.1.4.3 Special Features of Informal Credit Markets ---	71
4.1.2 Supply of and Demand for Credit	73
4.1.2.1 Loan Repayment Performance --	76
4.1.3 Savings Mobilization -----	81
4.2 Characteristics of the Farmers -----	82
4.3 Farm Enterprises -----	90
4.4 Farmers' Participation in the Agricultural Credit Market ----	93
4.5 Comparison of Formal and Informal Credit Markets -----	109
4.6 Regression Analyses -----	112
4.6.1 Regression Results -----	116
4.6.2 Hypotheses Testing -----	120
Chapter Five: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS -----	124
5.1 Summary and Conclusions -----	124
5.2 Recommendations -----	131
BIBLIOGRAPHY -----	135

LIST OF TABLES

<u>Table No</u>		<u>Page</u>
1.1	Percentage Contribution of Agriculture to Exports and Gross Domestic Product ----	1
1.2	Sectoral Analysis of Percentage Credit Allocation to the Private Sector -----	5
1.3	Contribution of the Smallscale Farms to the Gross Marketed Production and Credit Allocated to the Small Scale Farms as a Percentage of Total Agricultural Credit ---	6
1.4	Amounts of Credit Applied for and Approved and Successful Applicants for Credit from Credit Institutions in Kenya -----	22
4.1	Types of Loans Granted by the Credit Institutions in Kakamega District -----	63
4.2	Average Amount of Credit Applied for and Received by the Formal Credit Recipients --	74
4.3	Credit Allocated to Vihiga Division by the Credit Institutions -----	75
4.4	Loan Repayment Performance -----	77
4.5	Level of Formal Education of the Farmers -----	84
4.6	Formal Education and the use of Formal Credit	85
4.7	Occupation vis-a-vis Formal Credit Use	86
4.8	Age Distribution of the Sample Farmers and the Use of Formal Credit -----	88

List of Tables Cont'd

<u>Table No.</u>	<u>Page</u>
4.9	89
4.10	92
4.11	94
4.12	95
4.13	97
4.14	97
4.15	99
4.16	102
4.17	116

LIST OF APPENDICES

<u>Appendix No.</u>		<u>Page</u>
1	Agricultural Credit Markets in Vihiga Division -----	141
IIA	Regression Results for all Explanatory Variables -----	142
IIB	Correlation Matrix for the Variables used in the Regression Models -----	143
IIIA	Types of Loans Granted by A.F.C. -----	144
IIIB	Types of Loans Granted by Cooperatives -----	145
IIIC	Terms and Conditions for Cooperative Loans --	146
IIID	Terms and Conditions for PfP/Kenya Loans ---	148
IV	Questionnaire for the Farmers -----	149
V	Questionnaire for the Credit lenders -----	164

LIST OF FIGURES

<u>Figure No.</u>		<u>Page</u>
1.1	Map Showing the Location of Kakamega District	15
1.2	Map Showing Kakamega District Administrative Boundaries	16
1.3	Map Showing Vihiga Division Administrative Boundaries	17

ABBREVIATIONS

GDP	Gross Domestic Product
ROSCA	Rotating Savings and Credit Associations
PpF/Kenya	Partnership for Productivity Service Foundation
KTDA	Kenya Tea Development Authority
HCDA	Horticultural Crops Development Authority
AFC	Agricultural Finance Corporation
USAID	United States Agency for International Development
AIE	Authority to Incur Expenditure
KGGCU	Kenya Grain Growers Co-operative Union
SCIP	Smallholder Coffee Improvement Project
KPCU	Kenya Planters Co-operative Union
CBK	Co-operative Bank of Kenya
CPCS	Co-operative Production Credit Scheme
CIDA	Canadian International Development Agency
DANIDA	Danish International Development Agency
CWDC	Commonwealth Development Corporation
OPEC	Organization for Petroleum Exporting Countries
KShs.	Kenya Shillings

ABSTRACT

This study was carried out in Vihiga Division of Kakamega District in Kenya. The study analysed the credit markets facing the smallscale farmers in the area. The purpose of this study was to examine the causes of the limited use of formal credit in the area despite the need for credit to increase land productivity. In order to accomplish this study both secondary and primary data were collected. The data collected were analysed using descriptive statistics and regression analyses.

The results were that the formal credit sources had tight and rigid eligibility criteria plus cumbersome application and credit delivery. The supply of credit was far below the demand for credit. There was incompatibility of loan repayment schedules with the cash generating pattern of agricultural enterprises. Informal credit lending was predominant. The farmers experienced high borrower transaction costs. Some farmers were either not aware of the existence of formal credit sources or due to tight and rigid eligibility criteria never applied for formal credit.

The recommendations that arise from these results are as follows: Firstly, the eligibility

criteria, loan approval decisions and collection mechanisms should be made consistent with the capabilities of the small scale farmers to repay. Thus, where possible repayment period should coincide with marketing of farm produce. Some formal lenders should be integrated with the informal lenders especially the rotating savings and credit associations, so that group collateral rather than land title deed is used.

Secondly, unnecessarily cumbersome application and credit delivery procedures should be removed by reviewing. Thirdly, the credit institutions should intensify their supervisory component coupled with technical assistance to create awareness regarding availability of loan facilities and the benefits that accrue to the use of credit.

Finally, the formal credit sources should be encouraged to increase agricultural credit supply.

The approach here may be government monitoring to reduce the diversion of agricultural credit to other sectors. This can be achieved by the government employing specific technical experts in agricultural credit and deploying these experts in all credit institutions including the Central Bank of Kenya.

CHAPTER ONE

INTRODUCTION

1.1 Background

Agriculture is the major sector in Kenya's economy as it provides both food and raw materials to the rest of the economy. A growing agricultural sector provides an enlarged market as it expands aggregate demand for industrial products. In addition, the agricultural sector provides labour for the industrial sector as well as capital for investment elsewhere in the economy. Exports from the agricultural sector earn foreign exchange which is critical for imports of capital goods and other equipment for rapid industrialization and economic growth (Table 1.1).

Table 1.1: Percentage Contribution of Agriculture to the Exports and Gross Domestic Product (GDP) in Kenya 1980 - 1987

Year	1980	1981	1982	1983	1984	1985	1986	1987
Exports	40.81	40.34	48.09	55.64	57.82	58.30	65.46	58.39
GDP	30.30	30.15	32.15	31.92	30.44	30.11	29.95	29.62

Source: Statistical Abstracts 1985 - 1988

Given the importance of agriculture, it is imperative that agricultural production be increased. Three approaches to increasing agricultural production are: (i) to increase the agricultural land under cultivation. (ii) to intensify production on the land already used. (iii) Commodity switching whereby higher valued crops are produced. The first approach is limited because of the limited spatial availability and restriction of the high and medium potential arable land which constitutes only 12 per cent of the total land area of Kenya of 569,250 Km². The second and third approaches which seem more relevant to the Kenyan situation require that the services of improved technology, research, extension, credit, improved marketing, improved infrastructure and price incentives be applied.

The agricultural sector consists of the small scale and the large scale farms. The Ministry of Agriculture categorizes large scale farms as farms consisting of more than 20 acres while small scale farms consist of 20 acres or less. The contribution of the small scale farms to the gross marketed production is on average greater than the contribution of the large scale farms. Similarly, the productivity of the small scale farms is higher than that of the large scale farms in Kenya (Senga, 1976).

Most production processes whether on large or small scale farms take time before the inputs are converted into outputs. This means that the expenditures on inputs have to be incurred much in advance of the income from the resulting outputs. Producers meet these expenditures out of their past savings and whenever these savings fall short of the production requirements they may obtain credit from the existing agricultural credit markets.

Credit provides an increment of funds with which the borrower can produce or consume, thereby removing temporary or in some cases, permanent financial constraints. Credit has the potential to increase agricultural production in many ways. It accelerates the adoption of new technologies because it provides the basis for financing profitable alternatives such as the use of high yielding seed varieties. Credit smoothens the seasonal variations in demand for household inputs (Baker, 1973). Credit facilities are an integral part of the process of commercialization of the rural economy. Credit can also be used to purchase land. In spite of the aforesaid importance of credit no amount of credit even at the most reasonable interest rates can guarantee high productivity or incomes among the rural poor without the availability of complementary inputs and services, sound credit policies, well managed institutions and appropriate delivery channels.

The complementary inputs and services include technical advice, supervision and the availability of improved technology. Thus, credit serves a useful purpose only when it is used for a productive purpose to generate a saleable surplus. Agricultural credit is therefore a key element in the modernization of agriculture because it facilitates rapid on-farm capital formation and technological change in agriculture (Adams, 1971).

Despite the importance of agriculture in Kenya's economy, the amount of credit allocated to the agricultural sector is much less than the proportional contribution of agriculture to the Gross Domestic Product. For instance, during the years 1980 to 1987 agriculture contributed about 30% of the total gross domestic product but received less than 20% of the total credit lent to all sectors (Table 1.2). Other sectors include manufacturing, building and construction, trade, transportation, business services, social, community and personal services.

Table 1.2 Sectoral Analysis of Percentage Credit Allocation to the Private Sector 1980 - 1987

Year	1980	1981	1982	1983	1984	1985	1986	1987
Credit to Agriculture	17.24	17.21	16.04	18.37	16.42	16.25	14.34	16.47
Credit to Manufacturing	21.60	24.79	24.88	23.49	23.40	23.13	21.25	23.42
Credit to Trade	20.09	18.41	20.05	19.12	23.22	24.26	24.99	20.10
Credit to Business Services	24.09	20.28	23.27	24.35	22.87	21.92	24.35	22.97
Credit to other Sectors ^a	16.98	19.31	15.76	14.67	14.09	14.44	15.07	17.04

Source: Central Bank of Kenya. Economic Report, 1988

a. Other sectors include building and construction, transportation, social, community and personal services

Table 1.2 shows that credit allocated to the agricultural sector is less than that allocated to the other sectors although none of these other sectors contribute more to GDP than agriculture. It is therefore important to note that there is some restriction on the amount of credit allocated to the agricultural sector. Further, most of the agricultural credit goes to the large scale farms although it is the small scale farms that produce more of the gross marketed production (Table 1.3).

Table 1.3: Contribution of the Small Scale Farms to the Gross Marketed Production and Credit Allocated to the Small Scale Farms as a Percentage of Total Agricultural Credit, 1980 - 1987.

Year	1980	1981	1982	1983	1984	1985	1986	1987
Credit (%) ¹	39.10	41.71	35.28	31.14	37.26	32.47	33.16	43.11
Contribution (%) ²	52.20	53.80	51.70	51.20	51.00	54.20	45.10	47.20

Source: 1. Central Bank of Kenya Quarterly Economic Review. Vol. XXI No. 1 July - Sept. 1988
2. Statistical Abstract, 1988.

Table 1.3 reveals that the small scale farms receive less than fifty percent of the total credit allocated to the agricultural sector although on average the small scale farms produce more than fifty percent of the gross marketed production. In order to increase agricultural production in both small scale and large scale farms, use of improved production technology is imperative. However, such technology is associated with additional costs to the farmers. All inputs require capital which most small scale farmers in the rural areas may not have because of low capital formation. The low capital formation is likely to be due to low productivity, controlled output prices that are considerably lower compared to the input prices, poor marketing facilities, limited or lack of marketed surpluses and poor infrastructural development. Due to

the low capital formation in the small scale farm sector use of both production and consumption credit is imperative. The purpose of production credit is to provide funds for the undertaking of some economic activity so that the borrower will have a higher net income after loan repayment. Production credit is used for economic activities which include the purchase of the factors of production such as seeds, fertilizers, pesticides, labour and capital. Consumption credit on the other hand is used in the purchase of food, clothing and other domestic goods and services which are not used in further production of other goods. Such use is static rather than dynamic, since it does not increase the borrower's income or help him to repay the loan when it becomes due.

Farmers require to satisfy both consumption and production credit needs. Since own-savings in traditional agriculture tend to be relatively small at the initial stages of development, increased demand for working and fixed capital must largely come from the increased supply of credit. Further, while the farmers' incomes accrue during limited periods of the year, their expenses are spread throughout the year. This calls for improved systems of credit financing to help finance some of the production costs that the small scale farmers in the rural areas are unable to meet. However, this can only be achieved after a proper understanding of the existing credit markets.

1.2 The Problem Statement

The seasonality and variability of agricultural production render the demand for and supply of credit of particular importance in agricultural production (Binswanger and Rosenzweig, 1986). This requires efficient credit markets for purposes of making credit available at the right price and time. Von Pischke (1973) reported that the formal credit market serving the Kenyan agriculture reached only a small minority of the total number of farms. Similarly Donaldson and Von Pischke (1973) reported that the total amount of credit available to the smallholders was very small. Thus, only 12% to 15% of the then smallholders had access to formal credit, and that these were probably in the upper quartile of smallholders in terms of farm size and gross income.

Vihiga Division has a population density of over 700 persons per square kilometre and the average size of the holdings is less than 0.5 hectare per person, which is far below the FAO/UNO acceptable acreage of 1.4 hectares per family for subsistence purposes (Kenya, 1984). The area is also hilly and rocky along with sharp gradients in the terrain. Thus, the high population pressure on arable land combined with the topography of the area require that intensive land use be undertaken. The high productivity of land that could arise from intensive land use would enable the farmers

to meet their needs for subsistence and also generate a surplus for sale.

Jaetzold and Schmidt (1982) established that in Kakamega District, agricultural production and rural development showed accelerating negative tendencies. Infact the yield per hectare of many crops in Kakamega District is very low compared to the potential yield for the District (Kenya, 1989). The productivity of coffee and tea in Kakamega District is among the lowest in the country. For example, a coffee tree produces about 5 Kg of cherry per year whereas it could be possible to produce more than 15 Kg if it were properly tended and improved (Kenya, 1989). The productivity of livestock enterprises is also much lower than the expected productivity for the area. All these clearly indicate that there is low agricultural productivity in Kakamega District. It is, however, important to note that the situation is worse in Vihiga Division as exemplified by the fact that most food crops used especially maize and beans are bought from other areas of Kakamega District such as Lugari Division. Since Vihiga Division is a high potential agricultural area, such low land productivity is unwarranted. The said low land productivity is attributable mainly to the absence of intensive land use (Rukandema, 1977). Intensive land use requires adoption of more efficient technology such as the use of fertilizers, improved seeds, crop

protection chemicals and additional labour which generally must be purchased. Few small scale farmers have the financial resources to make such purchases and the informal credit market cannot supply the needed funds on acceptable terms (Miller, 1977). Donaldson and Von Pischke (1973) reported that credit was the major constraint in the intensification of both large scale and small scale farming. It is also expressed in the Sessional Paper No. 1 of 1986 that credit is necessary for intensification. The situation in Vihiga Division therefore indicates that there is limited use of credit from the existing formal credit sources. In essence there are low levels of credit use despite the need for credit for intensification in order to increase agricultural productivity. This also necessarily means that only a minority of farmers have access to formal credit. This research set to examine the causes of the low levels of credit use in the area despite the need for credit to increase land productivity. The limited use of credit is evidenced by the low usage of improved production technology that would ultimately increase land productivity (Rukandema, 1977). This research evaluated the problem of small scale farmers' limited use of formal credit by identifying credit sources and channels. The potential that existed for the mobilization of rural savings to increase agricultural productivity was also evaluated.

1.3 Justification

This study aimed at understanding the credit markets existing in Vihiga Division and further examined the ability of these credit markets to provide credit for productive purposes. The conditions required for the voluntary mobilization of rural savings such as adequate economic incentives and access to a savings institution were also evaluated. Evaluation of these conditions was considered necessary in view of the fact that if substantial amounts of local capital were mobilized they could complement external funds of credit.

By providing a clear understanding of the credit markets, the study would serve as a guide to policy makers interested in agricultural production. This is because it would give a direction for reorientation of policies and re-organization of systems in the sphere of rural credit. Farm credit plays a crucial role in stepping up and stabilizing agricultural growth especially when it is accompanied with improved production technology (Haque and Maji, 1978). This study was therefore justified on the basis of its aim to identify some ways of streamlining the credit market operations so that credit could be used to enhance agricultural production.

1.4 Objectives of the Study

The specific objectives of this study were as follows:

- (1) Identify the sources and channels, for both formal and informal agricultural credit.
- (2) Describe the credit market operations, including examining the eligibility criteria, the various interest rates and repayment performance.
- (3) Describe the characteristics of borrowers in both formal and informal credit markets.
- (4) Examine the supply situation and assess the factors determining acquisition of agricultural credit.

1.5 Hypotheses Tested

The following hypotheses were formulated and tested in this study:

- (1) The supply of institutional credit to farmers in Vihiga Division bears no relationship with the total farm size.
- (2) The value of the marketed surplus has no relationship with the amount of institutional credit actually obtained.

1.6 Location of the Study Area

This study was conducted in Vihiga Division, Kakamega District of Western Province in Kenya. Figures 1.1, 1.2 and 1.3 show the location of the study area. Figure 1.1 is a map of Kenya showing the location of Kakamega District while Figure 1.2 is a map showing the location of Vihiga Division in Kakamega District. Figure 1.3 is a map of Vihiga Division showing the administrative boundaries. Vihiga Division is one of the most densely populated agricultural areas of Kenya. The population density of the area is over 700 persons per square kilometre (Kenya, 1984). The high population density coupled with the restricted land area presents an acute land constraint to the bulk of the farmers.

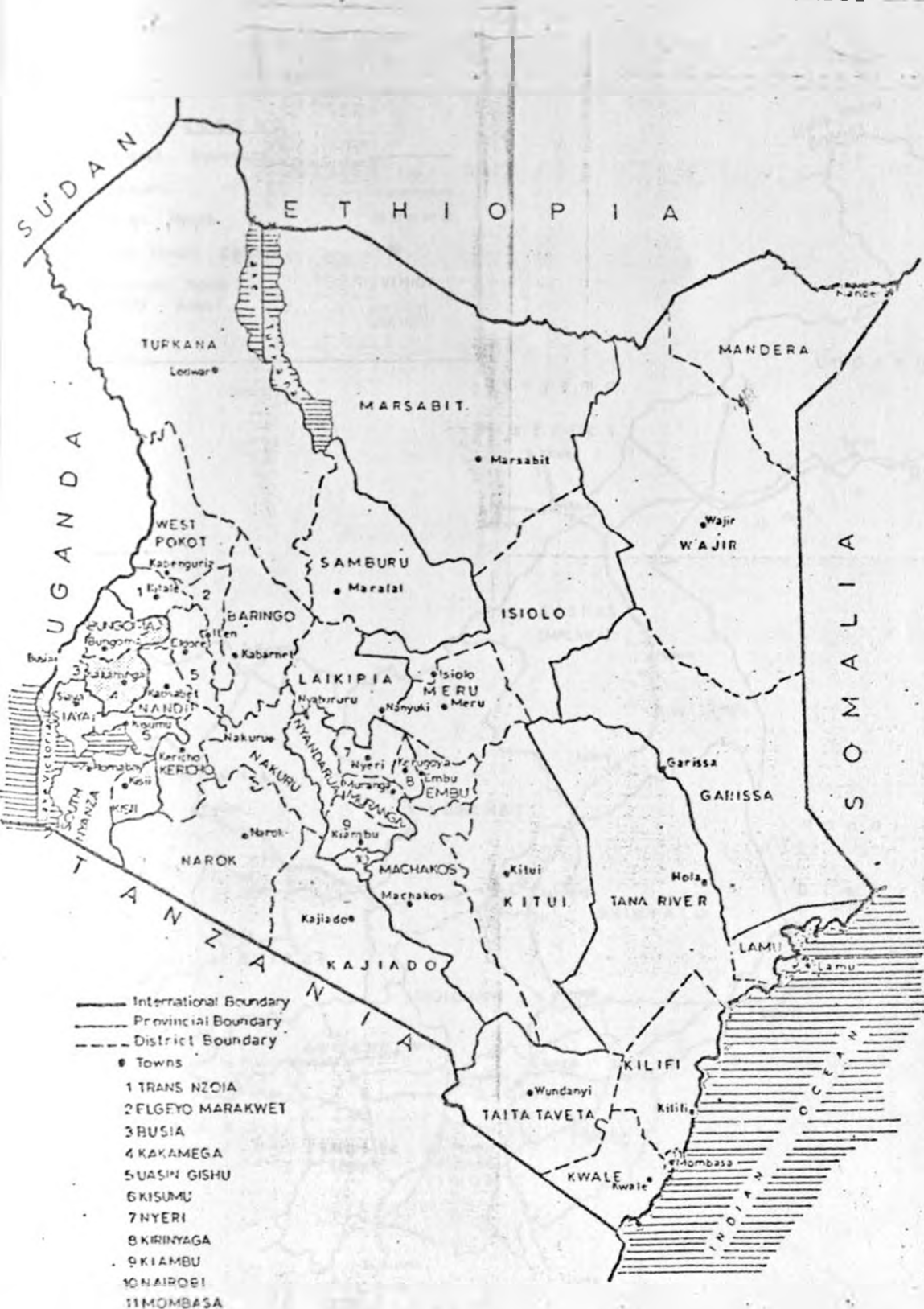
The geography of Vihiga Division does not lend itself to large scale mechanized farming primarily due to the frequency of rock outcrops. The average rainfall is about 1625 mm per year, with two peak rainy seasons, the long rains (February - June) and the short rains (August - September). Rainfall is reliable in 20 years out of 30 years. The average altitude of Vihiga Division is approximately 1500 m above sea level and no place in the division falls below 1350 m above sea level. Vihiga Division is in the Upper Midland Humid (UM1) agroecological zone which implies that it is a

high potential agricultural area. The average size of the Holdings is less than 0.5 hectares per person. The principal crop produced is maize, the staple food of the area's population.

Two criteria were used for selecting Vihiga Division as the study area. Firstly, there is a land constraint which implies that increased output can only be achieved through intensive land use. Consequently, there is need for improved inputs, such as crop protection chemicals, fertilizers and seeds, whose purchase require that the farmer's savings if any be boosted with credit. Credit may be obtained from the existing credit markets. The efficiency in the operation of the credit markets is crucial for the enhanced development in the area. In view of the foregoing issues an analysis of the credit markets in the area was considered necessary. Secondly, there are likely to be changes in credit use with advancement in agriculture and therefore it was necessary to establish if the credit markets could be improved to enhance development in the area.



FIGURE 1.1: MAP SHOWING THE LOCATION OF KAKAMEGA DISTRICT



 Kakamega District

Source:- Central Bureau of Statistics, 1989

FIGURE 1.2: MAP SHOWING KAKAMEGA DISTRICT ADMINISTRATIVE BOUNDARIES

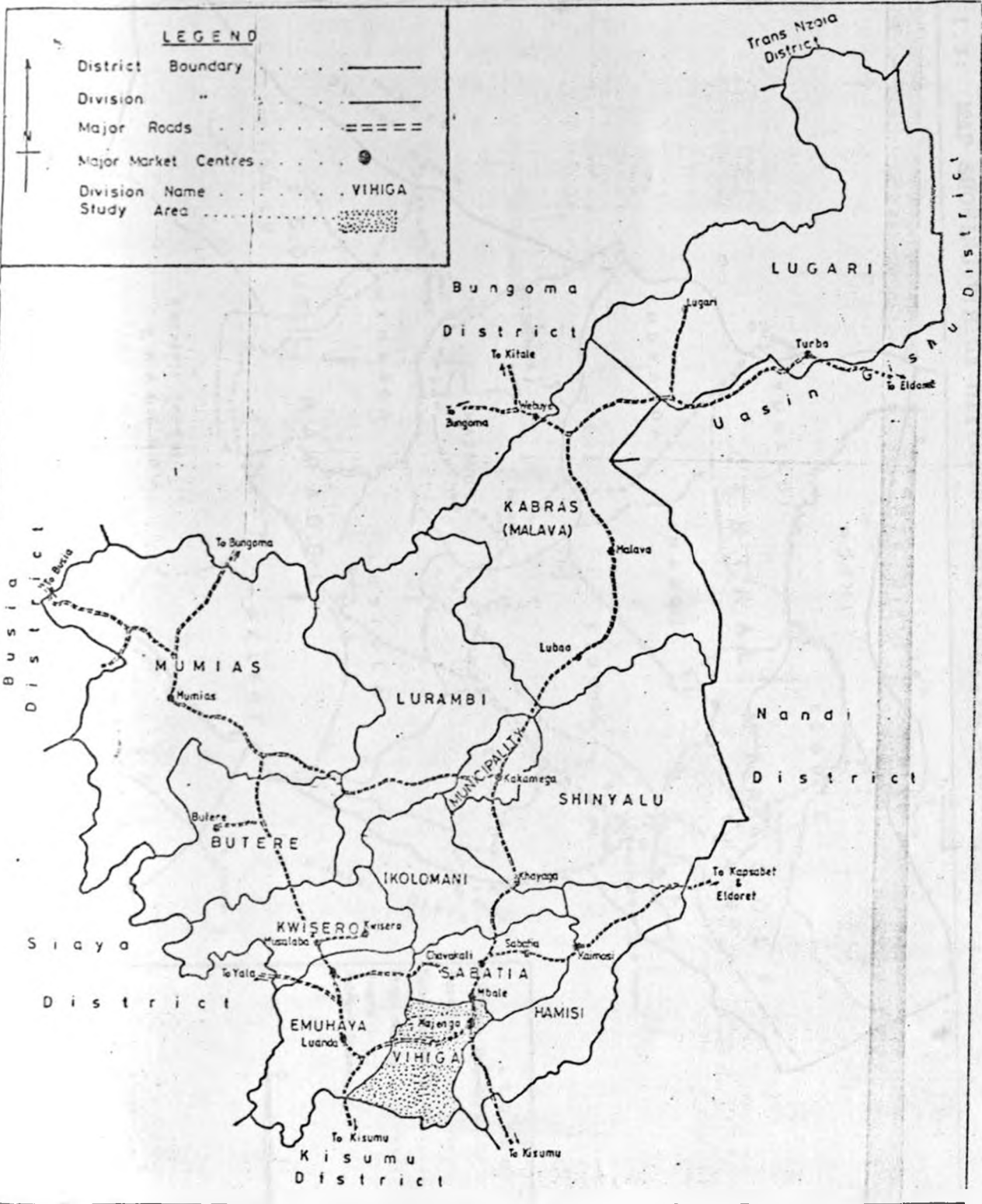
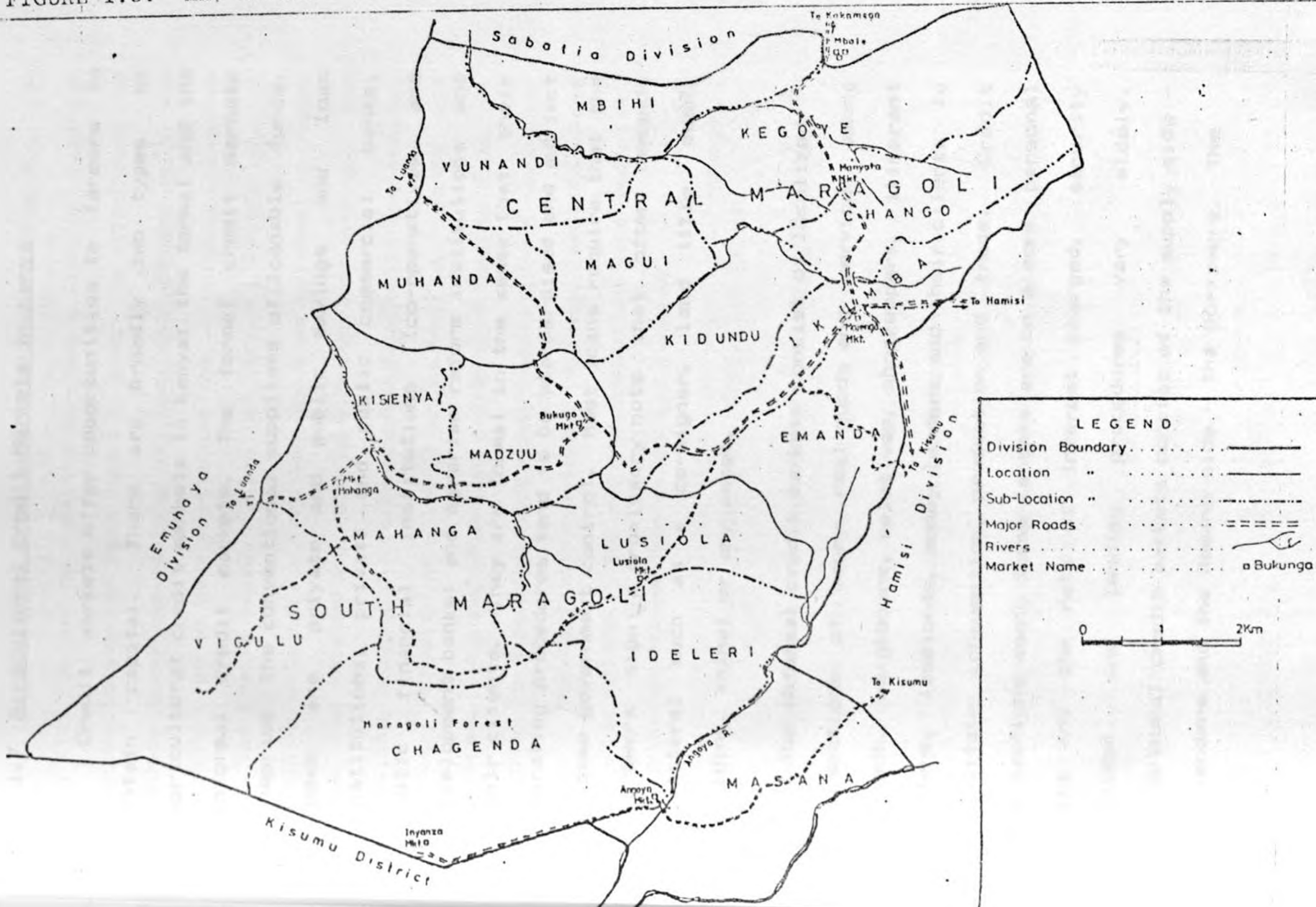


FIGURE 1.3: MAP SHOWING VIHIGA DIVISION ADMINISTRATIVE BOUNDARIES

- 17 -



1.7 Agricultural Credit Markets in Kenya

Credit markets offer opportunities to farmers to obtain capital. There are broadly two types of agricultural credit markets in Kenya: the formal and the informal credit markets. The formal credit markets comprise the conventional suppliers of loanable funds. These are private and public savings and loan institutions, private and public commercial banks, public financial institutions (co-operatives and development banks) and agrarian reform institutions and their clients. They are formal in the sense that their operating procedures tend to be standardised and subject to some government control. Most loans require that the borrowers sign a promissory note that often demands collateral such as a co-signer, land title deed, building, animal or any asset.

The informal credit markets consist of localized transactions of money, real goods and services among friends, neighbours, relatives, shopkeepers, itinerant traders, landlords, money lenders and their clients to facilitate consumption, production and trade. Credit transactions among these lenders are on a more personal basis and the rate of interest charged, security required and lending procedures vary widely. Agricultural credit markets consist of the supply side - the lenders and the demand side - the borrowers. The

lenders and borrowers may have conflicting objectives. This is especially so for the formal lenders. The conflict arises because the borrowers wish to maximize returns to the borrowed funds in order to allow them to achieve their aspirations and loan obligations while the lenders wish to make profit and insist on good guarantee for the loaned funds. There is limited conflict when it comes to informal lenders because some informal lenders like the friends and relatives charge no interest and lend to strengthen friendship and mutual assistance. Informal credit involves cash as well as goods and services. It constitutes an extremely flexible set of options for sharing resources, evening out seasonal labour or capital shortages, making profits and spreading risks. They also help define and maintain social bonds between borrowers and lenders.

1.7.1 Sources of Informal Credit in Kenya

The sources of informal credit, according to Kanoga (1978), include the following:

1. Friends, neighbours and relatives.
2. Rural merchants, often shopkeepers, who lend money, sell on credit or take savings.
3. Land lords, that is, farmers who lend to immigrants in their localities for short or long periods.
4. Chiefs, headmen, church leaders or other local leaders.

- 5. Informal local-level groups like the Rotating Savings and Credit Associations (ROSCAs)
- 6. Local welfare associations and contribution clubs.

1.7.2 Sources of Formal Credit in Kenya

According to Donaldson and Von Pischke (1973) the most important formal sources of agricultural credit are the following:

- 1. Government financial institutions which include:
 - (a) State-owned commercial banks (e.g. Kenya Commercial Bank, National Bank of Kenya).
 - (b) Parastatals (e.g. Agricultural Finance Corporation (A.F.C.), Kenya Tea Development Authority (KTDA), Pyrethrum Board of Kenya, Horticultural Crops Development Authority (HCDA), Cotton Lint and Seed Marketing Board and the National Irrigation Board.
- 2. Private commercial banks such as Barclays Bank
- 3. Private National and Multinational Commodity Corporations such as sugar, French beans and tobacco companies and the Kenya Breweries Limited.
- 4. Non-governmental organizations such as Action Aid - Kenya, Partnership for productivity and Freedom from Hunger.
- 5. The Co-operative Societies and Unions.

1.8 Agricultural Lending Requirements from

Formal Lenders

Agriculture is the backbone of Kenya's economy.

The Kenya Government therefore attempts to facilitate an adequate flow of credit from banks, parastatals and other lending agencies to the agricultural sector.

Thus the Central Bank of Kenya encourages financial institutions to become more involved in the agricultural sector and to expand out of trade finance. It has tried to achieve this through establishing agricultural lending targets. The Central Bank has, therefore, issued a directive to commercial banks to lend 17% of their net deposit liabilities to agricultural lending and non-bank financial institutions to lend 10% of their net deposit liabilities. The Central Bank monitors the achievement of these targets.

Although the government attempts to facilitate an adequate flow of credit to the agricultural sector, the demand for agricultural credit has not been met. The supply falls far below the demand as Table 1.4 shows.

Table 1.4: Amounts of Credit Applied for and Approved (KShs.) and Successful Applicants as a percentage of Total Applicants for Credit from Agricultural Credit Institutions in Kenya 1980 - 1988

Year	(1) Amount Applied for	(2) Amount Approved	(3) (2) as a percentage of (1) [(2)/(1) x 100]	(4) Successful Applicants (%)
1980	371,742,913	137,182,966	36.90	48.71
1981	91,658,705	66,886,946	72.97	49.35
1982	256,050,821	141,446,339	55.24	62.87
1983	303,061,777	177,627,161	58.61	56.21
1984	264,540,392	104,296,394	62.11	68.94
1985	463,825,216	265,811,557	57.31	79.09
1986	408,449,390	317,596,171	77.76	64.53
1987	736,790,735	306,674,137	41.62	63.85
1988	569,658,645	274,611,574	48.22	65.58

Source: Central Bank of Kenya, 1989

Table 1.4 reveals that on average only less than two thirds of the credit applied for is approved and eventually disbursed. The situation is made worse by the fact that not all those who apply for credit, ever receive it. For instance, over the years 1980 to 1988 less than 80% of all the credit applicants were successful. This indicates that not all potential loanees have access to formal credit. In 1988, in particular, about 35% of the loan applicants could not obtain the loans. The national picture on the credit situation therefore warrants a close examination of the operations of the credit markets in specific areas. This study focuses on credit markets in Vihiga Division.

CHAPTER TWO

LITERATURE REVIEW

Many studies have been conducted on credit, in general, (Collier (1983); Donaldson and Von Pischke (1973) and Heyer (1973)). Most of these studies report that credit is necessary for agricultural growth. In this chapter some of these studies and their findings are discussed.

In a study of small farmers' credit in Kenya, Donaldson and Von Pischke (1973) critically examined the performance of credit institutions. The purpose of their study was to suggest measures which could be used to improve the performance of credit institutions. The methodology used in the study was descriptive statistics and the data consisted of the eligibility criteria, number of farmers that had access to credit, types of loans, amount of credit disbursed and repayment performance. The study revealed that the amount of total credit available to smallholders was very small especially to the very smallholders. The study further showed that of the then 1.2 million smallholders only 12% to 15% had access to formal credit. These 12% to 15% were probably in the upper quartile of smallholders in terms of farm size and gross income. The study also revealed that those institutions lending to both large scale and small scale agriculture subsectors generally

provided less credit to the small farm category. The major reasons given in their study for this phenomenon were the absence of co-ordination among the credit institutions and the lack of integration of the provision of credit and the availability of inputs and advisory services. Further, credit was only provided for specific market segments or credit needs. Finally, Donaldson and Von Pischke noted that lack of credit was the major constraint in the intensification of both large scale and small scale farming.

In order to alleviate this situation, Donaldson and Von Pischke made two recommendations. Firstly, a formal policy panel separate from any lending institutions, but with representation of all institutions involved could be set up. Secondly, the main concerns were to be the institutional arrangements, lending conditions and means of obtaining payment.

However, Donaldson and Von Pischke did not consider the reasons why some farmers were not seeking credit from institutional sources. Similarly the effect of the terms and conditions of lending on borrowing behaviour were not considered. This study considered these aspects as well as examining the terms and conditions for obtaining loans.

Abuki (1977) studied the structure of various institutions supplying agricultural credit. The purpose

of the study was to investigate the legal regime providing for administration, regulation and implementation policy, and whether such law provided a suitable machinery. Abuki also attempted to evaluate how credit facilities had benefited land development. The study was based on Masige Division in Kisii District and the methodology consisted of interviews with various lending bodies and a few farmers. The information sought included the eligibility criteria, laws governing the operations of the credit institutions, farm size, off-farm income and education level of the farmers. In order to evaluate how credit facilities benefited land development Abuki determined the extent to which improved production technology had been adopted and the suitability of tied credit. Abuki found that the eligibility criteria for credit was not consistent with the capabilities of the small scale farmers. For instance, most of the farmers could not provide land title deed as collateral because of the possibility of foreclosure. Secondly, the equity contribution required was beyond the reach of most farmers. Credit was tied to some crops that were not suitable for the areas that were supposed to be served with the credit facilities. Abuki also found that the laws governing the operations of the Credit Institutions did not take into account the needs and the capabilities of the small scale farmers. Further, improved production technology was adopted to a

very limited extent. Accordingly, Abuki concluded that the lending institutions were inadequate and their management insufficient and therefore not of much help to the farmer. He further noted that the concept of credit worthiness and the dominance of illiteracy rendered credit less useful to farmers. Similarly, ignorance of the law and the existence of old pre-independence laws with only slight changes rendered smallholder credit facilities of very little assistance to the peasant who purportedly was intended to benefit from them. Abuki's study is different from this study because he was mainly concerned with the legal aspects as opposed to economic aspects which are the interests of this study.

Rosegrant and Siamwalla (1988) studied a subsidized agricultural credit program in the Philippines. The purpose of the study was to assess the conditions which could justify government credit programs. Similarly, the costs and benefits of government credit programs as well as the possible role of the government in agricultural credit were examined. The determination of interest rates and the supply of funds in informal agricultural credit markets was also explored. The data used were collected from the farmers and credit institutions and consisted of credit ceilings, yields, off-farm income, farm size, interest rates charged, rent, quantity of inputs used, wages, as well as input and output prices.

The methodology used was descriptive statistics plus a multi-season farm decision making model. The said model incorporated stochastic production technology, risk-neutral and risk-averse decision rules, short term savings/consumption behaviour and a dual financial market. Rosegrant and Siamwalla found that interest rates in informal credit markets were typically much higher than those in institutional markets. The reasons attributed to this were high risk premiums, opportunity cost of the funds and high costs of administration. The costs of government credit programs as found by Rosegrant and Siamwalla were high probability of default, high transaction costs and interest subsidies. The benefits of the government credit programs on the other hand were: Firstly, to eliminate the monopoly rent (if any) in interest rates charged in the informal credit market in order to increase income of the farmers. Secondly, increase the supply of credit because credit from informal sources was found to be only adequate for static traditional production technology. Informal credit supply was inadequate to finance optimal levels of input use and production following introduction of new production technology. Rosegrant and Siamwalla concluded that subsidies to farmers on institutional credit relative to informal credit market interest rates were justified when there was a monopoly profit element in those interest rates.

Similarly, the availability of productive technology was essential for a credit program to have a significantly positive impact on borrowing, input use, production and the farmers' incomes. The point of divergence between the study by Rosegrant and Siamwalla and this study is that this study compares informal and formal credit markets by looking at factors other than the interest rate only. For instance, in this study factors such as security required and grace period are also considered. In addition, the credit market operations in Vihiga Division have been described extensively.

Sarma and Prasad (1978) studied the demand for credit in Andhra, India using a simple linear regression model. The model variables consisted of land cultivated per agricultural worker, productivity, credit, fertilizer consumption per hectare and number of tractors per 100 hectares. Sarma and Prasad found that the technological variables such as fertilizers and tractors were the major determinants of the demand for credit. The economic variables namely size of the operational holding and productivity had a limited effect in determining the demand for credit. It was further established that the variables determining demand for credit could vary from region to region due to the differences in climate and agricultural potential.

- 29 -

This study also used regression analysis to establish the relationship between credit actually obtained and the factors thought to affect it. One of the objectives of this study was to examine the need for credit. The difference between the study by Sarma and Prasad and this study is that the studies were carried out at different time periods and in different locations with different physical and socio-economic factors.

In order to analyse the relationship between institutional and informal credit markets, Nisbet (1969) used data which were gathered in a field survey and also involved information obtained from institutional sources. The data were on lending terms and conditions, characteristics of the borrowers, nature of the market operations and size of the credit markets. Data were analysed using descriptive statistics. The results of the analysis showed that the institutional and informal credit markets were differentiated on the supply side by terms of lending and nature of the market operations. Nisbet established that there was a positive correlation between wealth, income, capital, level of education and borrowing from institutional credit markets. The number of farm operators seeking credit in the informal credit markets exceeded the number seeking credit in the institutional credit market. However, the total amount of credit made available to the farmers

from the institutional credit market exceeded the total amount from the informal credit market. The results mean that there was rationing of the loans to certain groups of farmers since the available funds for lending may have been limited compared to the demand. Similarly, it is likely that the institutional credit markets had tight and rigid terms and conditions for lending which precluded some farmers. It is also most probable that most farmers were seeking credit from the informal credit market because of the ease of dealing with the informal market. This study examined the terms and conditions for obtaining credit from the various credit markets in order to evaluate the problem of small scale farmers' low use of formal credit in Vihiga Division.

Heyer (1973) examined some of the assumptions underlying smallholder credit programs in Kenya. The issues examined were whether credit was crucial in smallholder development, whether smallholder credit had to be provided on commercial terms, on subsidized terms or both and what institutional arrangements were likely to be the most effective in meeting the needs. After examining these assumptions it was argued that the smallholder credit programmes had to be considered in their macro-economic context. Further, provision of credit on commercial terms had to be encouraged alongside subsidized credit. Heyer also noted that the provision of subsidized credit had to be with specific

purposes in mind and it had to be provided on a limited scale for those purposes only. Moreover, alternative measures had to be used for redistributing income to smallholders and for encouraging smallholder production. Heyer asserted that thought had to be given to the possibility of developing a national smallholder credit structure that could go right down to the local community and use substantial comparative advantage of the local institutions in performing some of the necessary functions.

In order to evaluate the economic rationale of borrowed loans for different inputs by the small scale farmers, Dhawan and Kahlon (1978) calculated the marginal value productivities of different resources and then compared with their acquisition costs. The analysis was made by fitting a Cobb-Douglas Production function to farm data for inputs used and outputs obtained. The overall functional analysis revealed that the small scale farmers were rational in making investments on implements and machinery, milk animals and seeds plus manure and fertilizers as the ratios of the marginal value product of these resources to their costs were significantly greater than unity. The small scale farmers could further increase their income by curtailing expenditures on labour and draft animals because the ratio of their marginal value product to their costs was not significantly greater than unity.

Dhawan and Kahlon did not consider the constraints to obtaining credit. These constraints are examined in this study.

In a review of performance and policies of agricultural credit in India, Gadgil (1986) reviewed the following four aspects. Firstly, the major changes in farm credit policy since 1951. Secondly, growth in credit since the induction of commercial banks in the field of rural credit. Thirdly, the performance of formal agricultural credit in relation to its contribution to agricultural growth and equity. Fourthly, the impact of the three changes stated above on the strength of credit institutions and their viability. From the review he concluded that improvement in productivity was influenced by a host of factors including advancement in agricultural technology. The adoption of such technology by the farmers required private investment in farm inputs as well as in fixed capital. The role of formal credit in promoting agricultural growth was to provide the wherewithal for private investment in inputs and fixed capital to enable farmers to switch over to a superior production function. Further, credit was a necessary but not a sufficient condition for agricultural growth and the disparate impact of credit on growth had to be traced to factors other than credit, for example, the environment in which the credit institutions operate.

Similarly, a stronger link between credit and input supply coupled with some advice on which inputs to use and how much could improve the productivity of credit. Availability of improved production technology was necessary to increase the productivity of credit. The viability of credit institutions depended on the loan recovery rate and the interest spread where interest spread refers to the difference between the percentage of interest rate received from loans and the percentage of interest rate paid on deposits and other borrowings. From the aforesaid issues it can be noted that one of the factors which may cause the malfunctioning of credit markets is likely to be a narrow interest spread. This is because a narrow interest spread can preclude accumulation of a surplus to cover bad debts and to provide for appointment of adequate staff. The likely effect of this is a delay in the processing of loans and rationing of credit to only a few farmers. The mobilization of deposits from farmers is also likely to be affected by the rigidly administered interest rates and repayment schedules.

Adams (1971) critically reviewed the External Funding Policy in Latin America by examining the following three assumptions: Firstly, "Credit shortage is one of the major bottlenecks causing low land and labor productivity". Secondly, "Concessional lending arrangements for farm credit are justified". Thirdly,

"Little savings capacity exists in rural areas, and marginal propensities to save are low". After examining the three aforesaid assumptions, Adams suggested three issues for emphasis. Firstly, where interest rates on agricultural credit do not reflect opportunity cost of capital, high priority should be given to raising the interest rates and market forces should have more say in the allocation of these funds. Secondly, higher interest rates on institutional savings could help mobilize a significant part of the rural savings potential and that these voluntary savings could provide a major portion of future credit needs. Thirdly, a more realistic cost of agricultural credit would bring into sharper focus the major constraints that slow agricultural development. This is because issues other than credit such as input and product prices would be considered critically. Seemingly market forces should be allowed to determine the price of agricultural credit and a deviation from this would be one reason leading to the malfunctioning of the credit markets in an area. Moreover, for the credit markets to perform their role of mobilizing rural savings interest rates on deposits should be high so that it acts as an incentive for people to deposit.

The effects of credit policy and fertilizer subsidy on farmers' input choices, production and income were examined with a multi-season decision making model by Rosegrant and Herdt (1981). The model parameters were

prices, costs, credit ceilings, inputs used, farm size, sharing rates, non-farm income, wages and rents. Stochastic production technology, risk-neutral and risk-averse decision rules, short-term savings/consumption behaviour and a dual financial market were considered. Results indicated that the risk-neutral rule was more consistent with actual input choices than risk-averse rules. Estimated yields increased from 21% to 30% from joint credit and fertilizer subsidies and benefits were greater on irrigated than on rainfed farms. Rosegrant and Herdt argued that a substantial default rate in the institutional credit market reduced credit program benefits. It was also found that a reduction in interest rates did not increase the productivity of credit programs. One important point from the study by Rosegrant and Herdt is that the availability of improved production technology increases the productivity of credit. This study also examined the relationship between improved production technology and credit use in Vihiga Division. Since farmers may know about the existence of improved production technology, the question of why credit may not be used by many farmers warrants examination. Absence of adequate rural savings and difficult terms and conditions of lending in credit markets may explain the lack of relationship between improved technology and credit use.

Taylor et. al. (1986) analysed the effects of a

subsidized credit program on technical and allocative efficiency of traditional farmers by comparing the technical and allocative efficiencies of a group of farmers participating in the program vis-a-vis a comparable group of non-participant farmers. In order to obtain estimates of technical and allocative efficiency direct estimation of full-frontier production function was undertaken. Data on production inputs and outputs were used. The production technology of the farms was represented by a Cobb-Douglas production function. The conclusions emanating from the results were that the program had no significant impact on the technical efficiency of traditional farmers and slightly negative impact on allocation efficiency. These results mean that a subsidized credit program should be coupled with supervision and technical assistance in order to increase efficiency in traditional farming.

In order to evaluate the impact of a supervised credit program on agricultural development, Colyer and Jimenez (1971) investigated the changes for a group of individual farms through time. They used two approaches. In the first approach total changes in gross farm output were broken down into contributive causes in order to determine what portion could have been due to the Supervised Credit Program (SCP) policies by eliminating those changes definitely attributable to other forces. The second approach used was an aggregate

production analysis using an unrestricted Cobb-Douglas type of function. In this function gross value of farm output (crops) was the dependent variable, independent variables were crop land, hired labour, value of farm equipment, annual operating expenses and credit. The results indicated that the SCP-farms performed better than the non-SCP farms, meaning that the basic purpose of the Supervised Credit was to induce agricultural development and production and to increase farmers' incomes. However, Colyer and Jimenez did not consider transaction costs. This is important because high transaction costs may overwhelm the benefits that accrue to credit thereby rendering the credit program unprofitable. When credit is provided coupled with technical assistance and supervision, it may be more profitable to the borrower though more expensive to the lenders since they will have to incur other transaction costs. Such extension services by lenders may enable more borrowers to make use of formal credit. This study investigated whether credit provided to farmers in Vihiga Division was accompanied with supervision and technical assistance or not.

Kumar et al (1978) estimated demand for credit on marginal farms using a profit function approach. A unit-output-price profit function corresponding to the Cobb-Douglas production function was fitted to the following variables: production for all crops per farm,

the variable and fixed inputs per farm. The study revealed that demand for credit by the marginal farmers was inelastic with respect to the prices of both inputs and outputs. The results of the study further revealed that when output prices were lower compared to the input prices, they acted as a disincentive to borrowing because farmers perceived credit as unproductive. This study assessed how farmers in Vihiga Division perceived credit in terms of its productivity.

Hayami and Ruttan (1985) argued that in order to reform agricultural credit markets in developing countries credit package had to be designed to induce traditional farmers to adopt modern inputs. Further, credit was supposed to be an income-transfer mechanism aimed at lessening inequalities in income distribution in rural areas. They also stated that subsidized credit could be viewed as an incentive to farmers to expand production inspite of disincentives resulting from market interventions or exchange rate distortions that discriminate against farmers in the product markets. In conclusion they stated that innovation was the critical element in economic development and credit was the principal instrument that allowed the innovator to bid resources away from other low paying activities. In view of all these and the fact that farmers were exploited by middlemen they asserted that emphasis had to be placed on credit.

Binswanger and Rosenzweig (1986) analysed credit markets, wealth and endowments in rural South India. The purpose of the analysis was to show the effect of incentives and information problems and material features of agriculture on existence and nature of credit markets. The data for the study consisted of assets, liabilities, owned land, schooling, age, current inheritance, wages and wealth. The analytical method they used was descriptive statistics and econometric estimations. The study focused on interrelations among debt, wealth, borrowing and lending behaviour to derive implications for efficiency and intergenerational mobility of resources. The results indicated that the amount and form of a household's assets were important determinants of the probability of receiving credit. This was because qualifying for credit depended on the capacity to pay even if the credit was not used on farm activities. The results also showed that regardless of source, increases in wealth significantly increased the likelihood that a borrower would obtain loans from several credit institutions. Further, education and wealth accounted for substantial differences in wealth and debt.

The analysis suggested that asymmetry of information and costs of acquiring information could lead to allocation inefficiency. These results show that credit institutions preferred lending to the

wealthier people because of the good guarantee for their loans and that an element of biased selection of borrowers is likely to ensue where lenders do not know most of the potential borrowers that would require credit. These results obtained by Binswanger and Rosenzweig are appealing but need to be confirmed for the Vihiga situation.

In a study of credit use and development on 19 Murang'a farms, Von Pischke (1974) found that loan funds were used for purposes other than those for which they were initially intended. This was irrespective of whether loans were provided in kind or cash. This is likely to be due to the fact that credit sources were only catering for specific segments of the credit markets and therefore failing to take into account the farmers' needs for credit. This was an indication of the conflict of objectives between the supply side and the demand side. Von Pischke also found that a minority of the farmers had access to formal credit due to the conflict of objectives. Von Pischke noted that borrowers from commercial banks had good repayment rates while the same borrowers had the worst default rates with the Agricultural Finance Corporation loans. The reasons underlying this notion are bestowed in the terms and conditions for obtaining loans and repayment procedures, which are issues of major concern in this study. It is also likely that the farmers borrowing from

the Agricultural Finance Corporation probably thought that such loans were gifts from the government.

In a discussion of fungibility of credit and evaluation of agricultural credit projects, Von Pischke and Adams (1980) stated that it was necessary to modify substantially the way credit projects were evaluated. A shift from the traditional method which involved an assessment of farm level impact to a financial view that incorporated fungibility was imperative. Thus, loans had to be viewed as additional liquidity rather than farm inputs. A financial view incorporates attention to important variables on the supply side which are reflected in the performance of lenders in rural financial markets.

Von Pischke and Adams noted that the change in the evaluation of agricultural credit markets was important because of the following reasons: Firstly, loans provided additional liquidity which tended to flow towards the most attractive use available from the perspective of the loan recipients. Secondly, credit project impact was elusive at the farm level but could be viewed adequately in the context of rural financial market performance. Thirdly, the major determinants of the financial situations at the farm level and rural financial market level which credit projects seek to ameliorate are not necessarily most effectively tackled

on a project basis alone but rather reflect policies which repress rural financial market development.

Similarly, Adams (1988) stated that a proper evaluation of credit projects had to involve measuring the performance of financial intermediaries rather than measuring the impact of credit use at the farm level. Adams suggested four measures which could be used to evaluate the performance of financial intermediaries: Firstly, the number of people who have regular access to formal financial services. Secondly, loan transaction costs that lenders incur in making loans to the rural poor. These transaction costs consist of the direct costs of obtaining loanable funds, administering and collecting the loans as well as the costs of supervision or technical assistance provided to the borrower by the lender. The direct costs of lending per unit of money lent vary inversely with the size of the loan. Thirdly, changes in the quality of services provided using loan recovery as a proxy for it. Where loan recovery is measured as the amount of payments collected during a period as a percentage of payments due during that period. Fourthly, the extent to which the project stimulates or retards savings mobilization.

This study adopted some of the measures suggested by Adams in order to examine the supply of credit by the various credit markets.

CHAPTER THREE

METHODOLOGY

3.1. Sources of Data

The sources of data for this study were government publications, farmers, credit institutions and informal credit lenders. The said sources of data provided both primary and secondary data. The primary data were obtained from the farmers as well as the credit lenders. The secondary data were obtained from government publications, credit institutions and other published material.

3.2 Sample and Sampling Plan

In order to obtain the sample used for this study two-stage random sampling was used. Thus, all the farmers in Vihiga Division were divided into groups according to administrative boundaries. Each sub-location was considered as a group. There were a total of seventeen sub-locations in Vihiga Division out of which a random sample of four sub-locations was drawn to represent the Division. The four sublocations were Madzuu, Lusiola, Magui and Chango. A list of all the farmers in each of the four sub-locations was obtained from the assistant chiefs. The number of farmers in each of these four sub-locations were 868, 698, 591 and

348 for Chango, Magui, Madzuu and Lusiola sub-locations respectively.

A sample of farmers was selected at random from each sub-location using random numbers. The size of the sample was proportional to the total number of farmers in the sub-location. This was done to ensure that the sub-locations with more farmers had a greater representation in the sample of study. Thus, the number of farmers selected was 22 from Chango sub-location, 18 from Magui sub-location, 15 from Madzuu sub-location and 9 from Lusiola sub-location. A total of 64 farmers were therefore interviewed.

Chiefs, Assistant Chiefs, Divisional Agricultural extension staff and the farmers helped with the identification of the formal lenders. Since the formal credit sources (credit institutions) were few, all of them were visited for purposes of gathering the required data. In each of these institutions either the manager or his representative was interviewed. In case of the informal credit sources information was obtained from the farmers. This was because during the interview the farmers who had obtained informal credit were asked to provide information about the terms and conditions of such credit from the various credit lenders.

3.3 Types of Data and Methods of Data Collection

The data used in this study were collected from sixty four farmers in Vihiga Division as well the credit

lenders using two structured questionnaires given in appendices IV and V. Before data collection was undertaken the questionnaires were pre-tested on eight farmers randomly chosen from Vihiga Division. Enumerators were hired and trained in data collection. Data were collected after pre-testing the questionnaires and training the enumerators. Thus, data collection was conducted by the author assisted by two enumerators during the months of March through June, 1989. Farmers were informed in advance about the intended data collection so that they could be present during the time of data collection. Similarly, the managers of the credit institutions were made aware of the intended data collection before the date of actual data collection.

3.3.1 Primary Data

Primary data were gathered at two levels. Firstly, a representative group of farmers selected at random from the four sub-locations was interviewed to provide information about farm size, quantity of fertilizer and other chemicals used, amount of credit applied for (KShs.), amount of credit actually obtained (KShs.), marketed surpluses, gross farm output, farm machinery and equipment owned. The same group of farmers was also asked to provide data on labour costs, off-farm income,

education level, market prices of all the inputs used on the farm, types of collateral offered for loans, loan repayments, age, sex, family size, and occupation.

Secondly, both formal and informal lenders were interviewed to provide information about areas of operation, loan types and application procedures. The lenders also provided information about the terms and conditions for obtaining loans such as interest rates charged, collateral required, repayment period and repayment performance.

3.3.2 Secondary Data

Collection of secondary data involved a review of the files in each of the credit institutions and government publications. The data collected consisted of the amounts of credit applied for and the amounts of credit disbursed for the previous five years (1984- 1988) as well as the repayments made. The credit lenders that provided information were: Agricultural Finance Corporation, Kenya Commercial Bank, Barclays Bank, Co-operative Bank of Kenya, Kakamega Dairy Co-operative Society, and the Kenya Tea Development Authority. One private company (Hortiequip) and two non-governmental organizations (Action Aid and Partnership for Productivity) as well as rotating savings and credit associations also provided information on credit.

3.4 Methods of Data Analysis

In order to analyse the data for this study both descriptive statistics and regression analyses were used.

3.4.1 Descriptive Statistics

In this method frequency tables and cross tabulations were used to show certain important aspects of the credit markets. These aspects included characteristics of the farmers, farmers' participation in the credit markets, credit market operations and an examination of the supply of credit.

3.4.2 Regression Analyses

Regression analyses were found useful in quantifying, testing and validating economic relationships studied in the credit markets in Vihiga Division. The method reveals structural relationships between variables so that appropriate policy evaluation could be undertaken depending on the resulting regression coefficients. This method was found more applicable because one of the objectives of this study was to investigate the relationship between credit acquisition and the factors thought to affect it.

The amount of credit actually obtained from the credit institutions was assumed to depend on a number

of factors. These factors included the portfolio, the difference between the interest rate received from loans and interest rate paid on deposits. Other factors were the potential borrowers' off-farm income, repayment capacity, farm size, value of the marketed surplus, expenditure on fertilizers, age of the head of the household, education level of the farmer, profitability of the project to be funded and the value of collateral to be offered.

The functional forms of the regression models used to establish the relationship between the amount of formal credit obtained and the various factors thought to affect it were the multiple linear regression model and the Cobb-Douglas production function. These functional forms have been used by others in the past for example Binswanger and Rosenzweig (1986), Sarma and Prasad (1978), Lau and Yotopoulos (1977) as well as Rukandema (1977). Both types of regression models were fitted to the data in order to determine which of the models would provide the best fit for the data. The two regression models are specified below. A generalized Cobb-Douglas function of the following form was used.

$$Y_i = AX_1^{b1} X_2^{b2} \dots X_n^{bn} e^U \quad (3.1)$$

In order that the Cobb-Douglas function could be solved by the least square method it was linearized in logarithms to give the log-linear regression model below.

$$\ln Y_i = \ln A + b_1 \ln X_1 + b_2 \ln X_2 + \dots + b_n \ln X_n + U_i \quad (3.2)$$

A multiple linear regression model of the following form was used.

$$Y_i = a + b_1 X_1 + b_2 X_2 + \dots + b_n X_n + U_i \quad (3.3)$$

In both models Y refers to the dependent variable and X_1 through X_n are explanatory variables. 'lnA' and 'a' are constants while b_1 through b_n are the regression coefficients for X_1 through X_n . U_i refers to the residuals which are due to measurement errors in Y and errors in the specification of the relationship between Y and the X's.

The method of ordinary least squares is used to give estimates of lnA, a, b_1 , b_2 , . . . , b_n that are unbiased and have minimum variance among the class of linear unbiased estimators. It is important to note that the interpretation of the coefficients (b_i 's) in the two models differs. In the multiple linear regression model the coefficients refer to the increase in Y if one of the regressors (X_i 's) is increased by one unit while all the other regressors are held constant. On the other hand, in the log-linear regression model the coefficients (b_i 's) refer to the elasticities, that is the percentage change in Y brought about by a 1% increase in one of the regressors while the other regressors are held constant.

The choice of the functional form of the model that would adequately characterize the data both in

statistical and economic terms as well as in terms of the known logic was based on the size of the coefficient of multiple determination (R^2) and an F test of the regression mean squares. The coefficient of multiple determination (R^2) indicates the proportion of variance in the dependent variable accounted for by the independent variables included in a particular type of equation. As such a larger value of R^2 was taken to indicate the form of the model which was most appropriate for the sample observations. It is desirable that R^2 be as close to unity as possible provided that the coefficients have low standard errors and therefore statistically significant otherwise there may be a problem of multicollinearity. An F test of the regression mean squares provides an over-all test of the significance of the fitted regression model, that is a test of the null hypothesis that all the regression coefficients are equal to zero. If the calculated F value is larger than the tabulated value of F at the desired probability level, the null hypothesis is probably not true. Thus, a larger F value was taken to indicate the functional form of the model appropriate for the set of sample observations in this study. In order that the comparison of the two functional forms of the models could be meaningful the number of the explanatory variables was fixed and the dependent variable kept the same throughout.

3.4.3 Definition of the Variables Included in the Models

The models consist of a single equation system composed of one dependent variable and six explanatory variables as indicated below:

(1) Dependent Variable (Y)

The dependent variable in the analytical models is the amount of credit actually obtained from the formal sources. This variable was measured as the sum of the credit obtained from all the credit institutions for the year 1988. It included credit in kind and cash, both of which were measured in Kenya Shillings (Kshs.).

(2) Explanatory (Independent) Variables (X's)

These variables are as explained below:

(a) Farm Size (X₁)

This was measured in hectares. Land is a fixed asset which is preferred as collateral by most formal lenders. Farmers with big land parcels are more likely to obtain credit from formal lenders. This is due to the fact that the amount of capital required to develop a large piece of land is expected to be more than that required for the development of a small piece. Moreover, credit institutions grant loan amounts on the basis of the value of the collateral offered. Farm size would therefore be expected to have a positive effect on the amount of formal credit actually obtained.

(b) Value of the Marketed Surplus (X_2)

This variable represents the sum of the value of the marketed surplus of farm output for all the crops and livestock. It was measured as an aggregate of the product of the number of units of marketed output and price per unit for all the crops and livestock- with a marketed surplus. This value is depicted in Kenya Shillings. The value of the marketed surplus is expected to have a negative effect on the amount of formal credit obtained.

(c) Expenditure on Fertilizers (X_3)

This variable represents the expenditure (in Kenya Shillings) on the fertilizers used on the farm. It was obtained by aggregating the expenditure on all the types of fertilizers used. The expenditure on each individual type of fertilizer was computed as the product of the units of fertilizer used and the price per unit. The fertilizer measurement units included 50 kg bags, 10 kg bags and 2 kg tins. This variable was included in the regression model because fertilizer is the most important input in crop production. Since the major farming activity in Vihiga Division was crop production, the amount of formal credit applied for and subsequently obtained was influenced by the anticipated expenditure on fertilizers. Accordingly, the expected expenditure on fertilizers would have a positive effect on the amount of formal credit obtained.

(d) Age of the Head of the Household (X₄)

The age of the head of the household is considered because he or she is the one responsible for making decisions regarding whether or not to request for credit for farm activities. It is also the head of the household who makes other management decisions on the farm. This variable was measured in years and was obtained by asking the farmer how old he or she was at the time of data collection.

(e) Education Level of the Farmer (X₅)

This is an important factor because before one gets a formal loan, he or she is expected to write an application for the loan and/or fill prescribed loan application forms. It is also expected that he or she understands the contents of the loan application formalities. Similarly, education improves the quality of management and gathering information. In this respect illiterate farmers or those with very limited formal education are at a disadvantage. Accordingly, the education level of the farmer is expected to have a positive influence on the amount of formal credit obtained. The educational level was measured in years of formal education, starting from standard one in primary school. Thus, standard one was considered as one year, and standard two as two years. The same trend was observed upto University level if any.

(f) Off-Farm Income (X₆)

This variable includes income from salaries, and/or wages earned, returns from non-farm business as well as remittances from urban and non-urban friends and relatives. This variable was measured in Kenya shillings per year. The proceeds from sales of farm product or land were not included. Off-farm income is specifically included in the model because the credit institutions insisted on good repayment capacity. Since returns from agricultural production are unreliable credit institutions consider off-farm income as one of the measures of repayment capacity. Off-farm income is expected to have a negative effect on the amount of formal credit actually obtained. This is because farmers with adequate off-farm income may self finance some farm operations without resorting to credit.

3.5 Problems of Measurement and Estimation.

The problems anticipated in this study were multicollinearity, omission of relevant variables and errors in the measurement of the variables.

3.5.1 Multicollinearity.

Multicollinearity refers to the tendency of the data to bunch or move together rather than being "spread out" (Intrilligator, 1978). In particular one or more of the explanatory variables is a linear combination of the others. The cause of multicollinearity is inclusion of

related variables in the regression model. The signs of multicollinearity are a simultaneous occurrence of a high F statistic, high value of the coefficient of multiple determination (R^2) and large standard errors of the coefficients (Intrilligator, 1978). In the presence of multicollinearity there is an interpretation problem. Thus, the separate effects of each of the individual explanatory variables cannot be distinguished. Similarly, the estimates are imprecise and unstable. Multicollinearity can therefore be a serious problem in a study such as this one which is concerned with structural analysis involving disentangling separate influences of explanatory variables.

The solutions to multicollinearity problems, according to Intrilligator (1978), are as follows: Firstly, some of the explanatory variables can be dropped and the model estimated after such variables have been eliminated. Alternatively, all the explanatory variables can be used whereby certain linear combinations of the coefficients of the explanatory variables are estimated rather than the coefficients of the original explanatory variables. For example, certain groups of the explanatory variables can be averaged or aggregated. A final solution to the problem of multicollinearity is to augment the sample data by additional data of a different type. Simple correlation

coefficients and partial correlation coefficients may help suggest candidates for exclusion. Thus, high (absolute) values of simple correlation coefficients between two explanatory variables are suggestive of the possibility that the two variables are related and that one of them might be omitted from the regression or that these variables might be averaged. It is, however, important to note that a variable can be dropped only if the standard error of the regression coefficient exceeds the absolute size of the estimated coefficient and then only if there are no logical grounds for including the variable.

3.5.2 Omission of Relevant Explanatory Variables

The problem of omitted variables arises due to the following facts: Firstly, observations on the variable concerned may not be available. Secondly, one may not be aware of the fact that the particular variable should be included in the regression equation if the maintained hypothesis is to be correctly specified.

Omission of a relevant explanatory variable(s) leads to biased and inconsistent coefficients (Intrilligator, 1978). The direction of the bias on the estimated coefficients depends on the direction of the correlation between the omitted and the included variable. If the omitted explanatory variable is not correlated with the included explanatory variable all the estimated coefficients will be unbiased in which case omission is

justified. On the other hand if the omitted explanatory variable has no effect on the dependent variable then the estimated coefficients will not be biased. Again under such conditions omission is justified. In case of biased and inconsistent estimated coefficients the usual tests of significance will not be valid.

Included in the regression model.

In this study, the interest rate charged by the credit institutions was not considered as an important variable to be incorporated in the regression models once the data was obtained. The interest rate charged by the various credit institutions did not vary significantly because of the government control. Accordingly, the effect of interest rate on the amount of credit actually obtained could not be determined within the framework of an econometric model. Moreover, some farmers who obtained formal credit did not know the interest rate charged. Further, the high tendency of farmers to borrow from informal lenders inspite of their relatively higher rates of interest indicates that credit actually obtained was interest inelastic.

Similarly, the value of the Collateral was not

included in the regression model. Loans may be secured by different means such as mortgages on land or buildings, liens on livestock or machinery, the pledging of trees or food crops and by personal guarantee of other individuals or groups. Thus, the

collateral required for the loans were as diverse as the number of formal lenders. Some of the collateral such as the group collateral and co-signer could not be valued in monetary terms. In view of the diverse forms of collateral and the inability of some collateral to be valued in monetary terms this variable was not included in the regression model.

3.5.3 Measurement Errors.

Errors in the measurement of the variables were expected possibly because of the failure of the respondents to correctly conceptualize the aims of the various questions. There was, therefore, a likelihood of some respondents giving false information. This problem was eliminated by proper training of the enumerators so that they could make it known to the respondents that the data collected would be used for academic purposes only. It was also made known to the respondents that strict confidentiality on the information obtained would be maintained. The enumerators were also trained on how to probe the respondents in order to obtain information that would otherwise be concealed by the respondents. Elimination of the said inaccuracies was made easier by the fact that data collection was conducted by the enumerators assisted by the author. Further, all the questionnaires were edited on the day the data were collected. Using the said approaches, all the likely errors of measurement were minimized.

CHAPTER FOUR

RESULTS AND DISCUSSION

In this chapter results from the survey questionnaires are presented coupled with the appropriate discussions. This chapter consists of six sections which are presented using two analytical approaches. The first analytical approach is descriptive statistics while the second is the result of regression analyses.

4.1 Agricultural Credit Markets in Vihiga Division

Vihiga Division is served by both formal and informal agricultural credit markets. The formal credit markets include the Agricultural Finance Corporation, commercial banks, cooperatives and non-governmental organizations. The informal credit markets include the relatives and friends, local money lenders as well as the rotating savings and credit associations. A list of all the agricultural credit sources encountered in the study is provided in appendix I

4.1.1 Agricultural Credit Market Operations

The issues that were considered for purposes of describing the agricultural credit market operations were as follows: the application procedures, zones of lender operations as well as the terms and conditions for obtaining credit such as interest rate charged, and the collateral required.

4.1.1.1 Loan Application Procedures

The loan application procedures varied depending on whether one was dealing with the informal or formal agricultural credit market. In case of the formal credit markets, the application procedures involved the following steps. Firstly, the farmer went to the specific credit institution(s) from which he or she intended to request for credit. Once the farmer reached the intended credit institution, he or she met the loans officer or loan committee members. The farmer then presented his or her financial problem to the loans officer. After discussing with the loans officer in some form of preliminary interview, the farmer was either given or told to purchase prescribed loan application forms. The farmer then filled the loan application forms from the credit institution(s) he or she intended to solicit credit from and then submitted the forms to the same credit institution(s). The information to be filled in the loan application form included the purpose for which credit was sought, the amount of credit required and the collateral to be offered.

Secondly, the loans officer visited the farmer's farm for purposes of farm appraisal and valuation of the collateral. Appraisal was done after at least one week from the time the loan application forms were submitted. On completion of the appraisal process the loans

committee or the manager of the credit institution concerned certified the eligibility of the applicant. The factors considered before a loan application was approved were the applicant's seasonal flow of income, character, risk bearing ability, previous financial obligations and the financial viability of the project to be financed. For the commercial banks, possession of a savings bank account that had been operated for at least six months was obligatory. After evaluation of all these factors the loan application was either approved or rejected or forwarded to the National Headquarters of the credit institution concerned for approval. The Agricultural Finance Corporation in particular forwarded loans beyond Kshs. 50,000.00 to the headquarters in Nairobi for approval. After loan approval, the credit institution concerned disbursed credit to the farmer in form of either money or farm inputs or a combination of the two. In case of the inputs, the loanee was given an authority to incur expenditure which he or she took to an inputs stockist, such as the Kenya Grain Growers Co-operative Union for purposes of obtaining farm inputs. The credit institutions reported that it took about one month to process the loan applications. It is important to note that in practice it took longer than one month before the successful loan applicants received credit.

The application procedure for credit in the informal credit market was quite simple. The borrower talked

personally to the lender about his financial needs. Thus, neither filling loan application forms, undertaking interviews, presenting land title deeds nor paying loan fees was undertaken. Since the lenders and borrowers knew one another the lender accepted or rejected the request immediately.

4.1.1.2 Zones of Credit Lender Operation

Zones of credit lender operation refer to the areas in which the credit lenders provide credit. All credit institutions operated in the whole of Kakamega District except the Wamondo Coffee Cooperative Society which operated in Vihiga Division only.

The zone of operation of the informal credit market varied considerably depending on the type of lender. Relatives could live several hundred kilometres apart and still carry out transactions. Rotating Savings and Credit Associations operated within very small areas. Loans granted by neighbours and friends took place in the same neighbourhood.

4.1.1.3 Terms and Conditions for the Types of Loans Granted by the Credit Institutions

The terms and conditions as well as the types of loans granted by the credit institutions were discussed as a group. This approach was taken in view of the fact that the terms and conditions of most credit institutions

were similar. However, some specific terms and conditions for particular credit institutions are given in Appendix III. The credit institutions provided three major types of loans as indicated in Table 4.1.

Table 4.1: Types of Loans Granted by the Credit Institutions

Loan Type	Repayment Period
Short term	0 - 3 years
Medium term	3 - 10 years
Long term	Over 10 years

Source: Survey Results, 1989.

(a) Short - Term Loans

Short-term loans are also called seasonal loans. These loans are given for a maximum of three years. The purpose of these loans is to purchase materials which are completely used in one season or production cycle, such as seeds, fertilizers, livestock feeds and livestock drugs as well as pesticides. Short-term loans are, therefore, used to meet the recurrent costs of production.

(b) Medium - Term Loans

Medium-term loans are the type of loans that are given for a period of more than three years but not exceeding ten years. They are used to finance items having a

...ally to groups for forward-looking to the members, productive life covering several years, such as breeding animals, planting and raising permanent crops, farm machinery and equipment.

(c) Long - Term Loans and strengthening of Long-term loans are given for a period exceeding ten years. The purpose of these loans is primarily to finance the purchase of land. These loans may also be used for financing construction of buildings, and making basic improvements on the land, such as construction of drainage or irrigation systems and water tanks.

4.1.1.3.1 Collateral for the Loans Granted

The types of collateral accepted by the credit institutions included land title deeds, mortgages, floating debentures, bonds of public companies, share certificates, life policy, group collateral and output from the project funded. However, most credit institutions insisted on land title deed as collateral. This was in view of the fact that the project funded was an agricultural project and land is the major resource of the agricultural sector. The credit institutions that never insisted on land title deed as collateral were the cooperatives, KTDA, Hortiequip Company, Action Aid-Kenya and PfP/Kenya. The commonest collateral accepted by PfP/Kenya and Action Aid-Kenya was group collateral because these two credit institutions granted credit

mainly to groups for forward-lending to the members. The use of group collateral enabled those without land title deeds to obtain credit. This was specifically so for women because they did not own land. The use of group collateral encouraged formation and strengthening of groups especially women groups. Hortiequip Company and KTDA accepted the crop produced as collateral. Hortiequip Company granted credit for the production of only french beans. Similarly, KTDA granted credit for the production of only tea. Thus, the loanees had to sell the said crops to only KTDA and Hortiequip Company respectively. Hortiequip Company accepted a minimum land size of $170m^2$ as qualifying for credit. The acceptance of a minimum land size of $170m^2$ is appropriate for Vihiga Division because of the high population density. KTDA and Hortiequip Company also provided technical assistance to the farmer. The commonest collateral accepted by the cooperatives was the output from the project funded.

In case of the commercial banks other than the Cooperative Bank of Kenya possession of an established savings bank account that had been in operation for at least six months was obligatory. The commercial banks that supplied credit to farmers in Vihiga Division were Kenya Commercial Bank, Cooperative Bank of Kenya, Barclays Bank and Standard Chartered Bank. The Cooperative Bank of Kenya granted credit to only cooperative societies and unions for forward lending to

their members. For the cooperatives to be eligible for credit they had to be members of the Cooperative Bank. Share subscription by members of the bank were determined as follows: Share contribution was a minimum of KShs. 100.00 per individual member of a primary cooperative society. The value of one share unit was KShs. 100.00. For cooperative unions and countrywide cooperative organizations a fully paid up member share contribution was a minimum of 4,000 shares of KShs. 100.00 each. The cooperatives that provide credit to Vihiga Division are Kakamega District Cooperative Union, Wamondo Coffee Cooperative Society, Kakamega Dairy Cooperative Society and the Kakamega Teachers Savings and Credit Cooperative Society.

4.1.1.3.2 Grace Period

The grace period for the loans granted by most of the credit institutions was one year. However, for all the commercial banks except the Cooperative Bank loan repayment was supposed to commence one month from the day the loan was granted. The grace period for Hortiequip Company was 3.5 months, that is the crop season for french beans. It is important to note that the grace period should ideally be consistent with the cash generating pattern of the enterprise funded. The grace period allowed by commercial banks did not take this into account.

4.1.1.3.3 Interest Rate

Interest rate refers to the price paid for the use of credit funds. In competitive equilibrium, the interest rate on loans must be such that the expected returns to the lender are equal to the total cost of the loanable funds. Competitive equilibrium interest rate is, therefore, a function of the opportunity cost of the funds to the lender, the transaction costs, the probability of repayment of the loan and the amount of collateral on the loan. Thus, interest rate on agricultural credit should reflect the opportunity cost or scarcity of capital and the market forces of demand and supply should direct the allocation of credit.

The interest rate charged by the credit institutions did not show much variation. This is because of government control of these rates. The range of interest rate was from 12% to 15% per year for most of the credit institutions. The Kakamega Dairy Co-operative Society charged an interest rate of 18% a year.

It is important to note that the interest rate charged by the credit institutions can be much higher than what is indicated in the books if the costs borne by the farmer in acquiring credit are considered. The cost borne by the farmer consist mainly of transaction costs which include transport and time lost due to the delays. The borrowers had to make an average of four trips to and from Kakamega District town where the credit institutions

were located. Four trips to and from Kakamega District Headquarters would cost an average of KShs. 200.00. In a situation where more trips were made the cost would have to increase proportionately. On a small loan these transaction costs could substantially exceed the interest rate charged, so that the total cost of credit to the borrower would have to be much higher than the reported interest rate. When these transaction costs are taken into account the higher interest rates charged by informal lenders on small loans may be more competitive with institutional credit than is generally appreciated.

4.1.1.3.4 Form in Which Credit was Granted

Credit was provided in form of either cash or farm inputs or a combination of the two. All the commercial banks provided loans exclusively in form of cash. Conversely, the Kenya Tea Development Authority, the Wamondo Coffee Cooperative Society and Hortiequip Company provided loans exclusively in form of farm inputs. The farm inputs provided included fertilizers, seeds and crop protection chemicals. KTDA, in particular, provided credit in form of fertilizers only. Hortiequip Company and KTDA took the required inputs upto the farmers' farm. The other credit institutions provided credit in form of either farm inputs or a combination of farm inputs and cash. In case of the inputs the loanee was given an authority to incur expenditure which he or she took to an

inputs stockist such as the Kenya Grain Growers Cooperative Union in order to obtain the inputs.

4.1.1.4 Terms and Conditions for Informal Credit

The major informal lenders in Vihiga Division were relatives, friends, local money lenders as well as rotating savings and credit associations. The local money lenders included commodity traders, non-relatives, non-friends, church leaders and other local leaders. The rotating savings and credit associations (ROSCAs) are defined as associations formed by a group of individuals who agree to make regular contributions to a fund which is given, in whole or in part to each contributor in rotation. Informal lending was widespread in Vihiga Division. Special mention is made of the widespread nature of ROSCAs.

Credit in the informal credit markets was granted without undergoing all the formalities of credit institution transactions. Loans were advanced in small sums and for one month. In case of the ROSCAs, referred to as "Merry Go Round" in Vihiga, a lumpsum fund composed of fixed contributions from each member of the association was distributed at fixed intervals and as a whole to each member of the association in rotation. The ROSCAs consisted of at least fifteen members. The contribution by each member ranged from KShs. 20.00 to

KShs. 250.00 per month. These associations supplied credit to both members and non-members. However, the interest rate charged by the informal lenders farmers reported that the credit supplied by these associations as well as other informal lenders was not enough to enable the farmers to undertake all their farming activities. The credit supplied, therefore, was not enough to meet all the credit needs. This was justified by the fact that those who received credit from ROSCA's also admitted having received credit from other sources. Fifty percent of the farmers interviewed reported that they were members of ROSCAs.

4.1.1.4.1 Collateral for the Loans Granted

Most loans in the informal credit market were not secured. This was possibly because the idea of providing collateral showed lack of trust and social cohesion. The guarantee for loans was the verbal promise of the borrower, thus a person's word took the place of collateral. This encouraged a reputation of honesty, reliability and seriousness toward financial obligations. Some informal credit markets such as the rotating savings and credit associations required a co-signer as collateral. The loans were supposed to be repaid lumpsum at the end of one month from the day they were granted.

4.1.3 Special Features of Informal Credit Markets

led to a number of factors: First was the ease and

4.1.1.4.2 Interest Rate

The interest rate charged by the informal lenders ranged from 0% to 300% per year. An interest rate of 0% per year applied mainly to relatives and friends because they extended credit in order to enhance relationships. The interest rate charged by ROSCAs ranged from 60% to 100% per year for the non-members. Members of ROSCAs were given interest free loans. The other informal lenders charged variable interest rates which could be as high as 300%. It is therefore clear that the informal lenders charged higher interest rates than those charged by the formal lenders. Whereas the highest interest rate charged by the formal lenders was 18% per year, that charged by the informal lenders was 300% per year. For some informal lenders interest rate had to be paid before the loan was granted.

4.1.1.4.3 Special Features of Informal Credit Markets

The informal credit markets were dispersed throughout Vihiga Division inspite of the inadequacy of credit granted. Every village had one or more informal lenders. The predominance of and farmers' preference for informal lending compared to formal lending was attributed to a number of factors: First was the ease and

4.1.3 Supply of and Demand for Credit

convenience in the lending procedures in the informal credit market. Second was timely and easy loan disbursement procedures in the informal credit market. Thirdly, in the informal credit market, neither budgeting nor anticipation of needs was required. Finally, the informal lenders were close to the farmers. Loan delinquency rates were very low in the informal credit markets. This was due to the fact that both borrowers and lenders knew each other well and social pressure forced recalcitrant borrowers to repay.

The ROSCAs, in particular, were widespread in Vihiga Division due to a number of reasons. Firstly, in contrast to the formal lenders ROSCAs could take savings and credit down to the most basic level such as a village or a section of a village. ROSCAs were therefore very accessible. Secondly, the order of rotation of the fund could be varied depending on need. That is, there was adequate flexibility. Finally, ROSCAs provided multiple functions (namely financial, social and economic functions).

Table 4.2: Average Amount of Credit Applied for and Received by Farmers in Village Division (Rural) - 1989

4.1.2 Supply of and Demand for Credit

In order to examine the supply of credit, measuring the performance of the credit markets had to be undertaken. Actual loan disbursements and repayment performance were considered. At the farm level the amount of loan applied for, for various purposes was compared with the actual amount of loan granted as shown in Table 4.2. The amount of credit supplied was not adequate to meet the demand for credit. Only 37 percent of all the farmers interviewed used formal credit. The demand for credit was high because of the need to intensify production in order to increase agricultural production. Intensive land use required that improved inputs be used. Such inputs had to be purchased. The purchase of such inputs required the use of credit. It is evident, therefore, that there was a serious need for credit to increase the productivity of land in the area. It is also the case that the inability of the credit institutions to supply credit to all the farmers that required it was one of the factors that were underlying the widespread nature of informal lending in the area.

Survey Results, 1989

more than in the table refer to credit for all the credit institutions serving village farmers to credit applied for, there are also the loans applied for the same amount of credit only the average amount was used. The amount of credit received is the amount of credit received. It is calculated as the average amount of credit received by all the farmers that applied for the same amount of credit. The ratio is credit received as a percentage of credit applied for.

Table 4.2: Average Amount of Credit Applied for and Received by the Formal Credit Recipients in Vihiga Division (KShs.) - 1988

(1) Amount Applied for	(2) Amount Received	(3) Credit Received Credit Applied for x 100
35,000.00	20,165.00	57.61
30,500.00	15,460.00	50.69
25,000.00	23,000.00	92.00
15,000.00	14,000.00	93.33
11,000.00	11,000.00	100.00
3,750.00	2,730.00	73.33
2,965.00	1,665.00	56.16
1,750.00	1,250.00	71.42
1,460.00	1,350.00	92.47
1,330.00	830.00	62.41
1,000.00	500.00	50.00
765.00	665.00	86.93
625.00	625.00	100.00
365.00	265.00	72.60
250.00	250.00	100.00
165.00	165.00	100.00

Source: Survey Results, 1989

Note:

1. The figures given in the table refer to credit from all the credit institutions serving Vihiga.
2. Column 1 refers to credit applied for. Where more than one farmer applied for the same amount of credit only the average amount was used.
3. Column 2 refers to amount of credit received. It is calculated as the average amount of credit received by all the farmers that applied for the same amount of credit.
4. Column 3 refers to credit received as a percentage of credit applied for.

In spite of the inability of the credit institutions to supply credit to all those farmers that required it, the volume of credit that they supplied to Vihiga Division was very variable (Table 4.3).

Table 4.3: Credit Allocated to Vihiga Division by the Credit Institutions in Kakamega District 1984 - 1988

Name of Credit Institution	Credit Allocated to Vihiga Division by the Given Credit Institutions (Kshs)	Percentage of Total Credit Allocated to the Given Credit Institutions that went to Vihiga Division	Contribution by the Given Credit Institutions to Total Credit Allocated to Vihiga (Z).
KTDA	912,838.90	10.00	4.16
AFC	261,976.75	1.00	1.19
CBK	3,268,333.60	6.59	14.89
Commercial Banks	60,000.00	0.06	0.27
Hortiequip Company	16,421,463.75	75.00	74.73
PfP/Kenya	299,088.75	12.24	1.36
Action Aid-Kenya	750,000.00	100.00	3.41
Total	21,973,701.75	-	100.00

Source: Survey Results, 1989.

Table 4.3 shows that the credit institutions serving Kakamega District apportioned different amounts of credit to Vihiga Division. It is also evident from the table that most credit institutions made more credit available to other parts of Kakamega District other than Vihiga

4.1.2.1 Loan Repayment Performance for all the Division. The Commercial Banks other than the Cooperative Bank of Kenya (CBK) allocated the least amount of their total credit to farmers in Vihiga Division while Action Aid-Kenya allocated 100% of its total credit to Vihiga Division. The Agricultural Finance Corporation allocated only one percent of its total credit to Vihiga. The AFC credit allocation is inconsistent with the expectation. It would have been expected that the AFC being an exclusive supplier of agricultural credit should have had the biggest share of total credit to Vihiga. This is because there is a high need for agricultural credit in the area. The minimum average farm size required by the credit institutions such as AFC probably explains their low involvement in Vihiga Division.

4.1.2.1 Loan Repayment Performance

Loan repayment performance is measured as the amount of payments collected during a given period as a percentage of repayments due during that period (Adams 1988). The loans for all the credit institutions were either repaid lumpsum or in installments. The loan repayment performance varied from one credit institution to another. The Agricultural Finance Corporation had the poorest repayment record while the Commercial Banks other than the Co-operative Bank had the best repayment record (Table 4.4).

Table 4.4: Repayment Performance (%) for all the Credit Institutions as at the end of 1988.

Credit Institution	Repayment Performance (%)
Commercial Banks	98
Hortiequip Company	89
KTDA	68
PfP/Kenya	62
Co-operative Bank	60
A.F.C.	40

source: Survey Results, 1989.

The loan repayment performance for PfP/Kenya and Hortiequip Company was attributed to the provision of technical and financial assistance as well as supervision. The assistance given made the farmers aware of the need to use credit productively to generate profits and ensure repayment. In case of the commercial banks other than the Cooperative Bank, the good loan repayment performance was attributed to the fact that the borrower had an established bank account. Thus, the savings relationship provided the banks with useful information about the borrower which helped to reduce the risk of loan delinquency. This is because the potential

primary default. Further, it is probable that some of the A.F.C. loans are gifts from the government which were not supposed to be repaid. Thirdly,

borrower had an established bank account through which loans could be serviced. It is also likely that the bank loanees were investing in higher income generating activities other than farming. This is in view of the fact that the grace period for the bank loans was only one month, yet within one month no agricultural project could have generated any reasonable output whose value would allow loan repayment to commence then. The A.F.C.

The poor loan repayment for the Agricultural Finance Corporation is attributed to several factors: Firstly, about eighty percent of the A.F.C. Loans are given in kind and are therefore most often channeled to agriculture. However, agricultural (land) productivity is low in Kakamega District (Kenya, 1989). Hence, agricultural enterprises produce low profits which eventually lead to poor repayment capacity and performance. This is because loan repayment performance is significantly affected by crop yields (Gachanja 1979). Secondly, A.F.C. is an exclusively agricultural credit institution and therefore more often than not considered writing off loans in the event of poor enterprise performance caused by natural catastrophes, unlike commercial banks which insisted on repayment. It is therefore likely that these approaches encouraged discretionary default. Further, it is probable that some farmers considered A.F.C. loans as gifts from the government which were not supposed to be repaid. Thirdly,

the A.F.C. loan officers did not follow up loanees to find out the progress of the project funded and subsequently provide the appropriate advice or solution increase of problems in order to reduce or eliminate loan delinquency problems. This last cause of poor loan repayment performance is attributed to the fact that there were too few loan officers to handle the volume of loans. In fact by the time of the survey the A.F.C. Kakamega branch had only two loan officers. In view of all the factors that led to the poor loan repayment performance by the A.F.C. it is suggested that a follow up of loanees be undertaken in order to verify borrower indebtedness, identify repayment problems and take measures to improve repayment performance. Similarly, it is necessary for A.F.C. to provide technical assistance to the loanees.

The KTDA loan repayment performance was average. This was attributed to the fact that loan repayments were obtained by making monthly deductions from the growers' delivery proceeds. However, the loan repayment performance may not be as good as depicted in Table 4.4 because of the fact that all loans that were not repaid within three years were cancelled.

The loan repayment performance of the Co-operative Bank can be explained by the fact that the Bank handles many loan schemes with different loan criteria, terms and conditions. This means that the lending criteria of the

The KDB in particular cancelled all loans not repaid by the Cooperative Bank were predetermined by the lending requirements of the individual loan schemes. There was, therefore, complicated loan administration which culminated in complicated efforts to enforce loan repayments. Further, most of the loans granted by the Cooperative Bank were approved by the Ministry of Cooperative Development. In view of these, the bank had very little say over the loan collateral which could be used to enforce repayments by possible foreclosure. The other factor underlying the loan repayment performance of the Bank was that the loans were given to the cooperatives for own-lending to their members. However, most of these cooperatives had poor organization, management problems as well as poor member cohesion. On the basis of all these it is argued that in order to improve loan repayment performance of the Cooperative Bank the following two steps should be taken: Firstly, most credit decisions should be undertaken by the bank rather than the Ministry of Cooperative Development. Secondly, the government should provide technical assistance to the Cooperative Societies and Unions in order to improve the management skills and member cohesion.

All the Credit Institutions reported that in the event of loan delinquency any of the following measures would be taken: The measures were auctioning the collateral, rescheduling the loan or cancelling the loan.

The KTDA in particular cancelled all loans not repaid within three years. Hortiequip Company on the other hand cancelled all the loans not repaid at the end of the season but denied the loan defaulters access to subsequent loans.

4.1.3. Savings Mobilization

Savings mobilization should be done by all credit markets. This is in order that those with more funds can release them for use by those with limited funds. Thus, with respect to savings mobilization equity participation as well as interest rates paid on deposits were examined.

Savings mobilization in the informal credit market was undertaken by very few lenders. Such informal lenders required that the borrower(s) pay the interest rate before the loan was granted. On the other hand most formal lenders undertook to mobilise rural savings. The formal lenders had various approaches to savings mobilization. The Agricultural Finance Corporation and Partnership for Productivity required that a loanee raise at least 25% of the total loan approved. Twenty-five percent was therefore the required equity contribution. The equity contribution was supposed to be either in cash or in form of farm inputs. The problem with this approach to savings mobilization was that some farmers could not afford the required 25%. This led to underfinancing of the projects. It is suggested that where a potential loanee has a viable project yet he or

she cannot afford the required 25%, efforts should be undertaken to assist him to raise it.

In case of commercial banks, loanees were supposed to open and operate a savings account where an interest rate of 12% per year was paid on deposits. The minimum interest bearing deposit was KShs. 1,000.00. Opportunities also existed for loanees to operate fixed deposit accounts plus current accounts. Fixed deposit accounts carried the highest interest rate, usually more than 12% per year. However, the actual interest paid depended on the duration for which the account was operated. The duration ranged from a minimum of three months to a maximum of twelve months. The Kakamega Teachers Savings and Credit Cooperative Society had the following system of savings mobilization. The members of this cooperative were paid dividends at the rate of 2% per year on shares and 6% per year on deposits. For purposes of this cooperative shares referred to any amounts ranging from KShs. 20.00 to KShs. 2,000.00 while deposits referred to any amounts greater than KShs. 2,000.00.

4.2 Characteristics of the Farmers

Certain quantitative variables were used to describe characteristics of the farmers. These variables were thought to influence credit acquisition from the various credit sources. Thus, age of the farmer, occupation,

education level, farm size, sources of off-farm income, respondent's relationship to the household head and the size of the household were considered.

(a) Respondent's Relationship to the Household Head

The total sample size consisted of sixty-four farmers. About seventy-two percent of the respondents were the household heads and twenty-eight percent consisted of either the wife or son. Thus, farming was confined to the family, where the family consisted of the husband, wife and children.

(b) Education Level of the Farmers

Education is an important aspect of agricultural development. Hayami and Ruttan (1985) argued that in less developed countries, it needs substantial investment in rural education to increase the productivity of the farm to any reasonable magnitude. Education is expected to provide a basis for technical change. The level of formal education for about sixty-six percent of the farmers was primary school education. However, the number of farmers with formal education exceeded that of those with informal education. Informal education in this context referred to farm training and artisan training (Table 4.5).

Table 4.5: Level of Formal Education of the Farmers

Formal Education	No. of Farmers	Percentage
None	8	12.5
Primary	42	65.6
Secondary	13	20.3
Technical/College	1	1.6
Total	64	100.0

Source: Survey Results, 1989.

Table 4.5 reveals that two thirds of the farmers interviewed had limited formal education, that is primary school education only. The implication is that the farming community had limited formal education. Hayami and Ruttan (1985) pointed out that lack of adequate education was the basis for conservatism, limitation of capacity to absorb risks, fear to invest in production resources and a general lack of information. Hayami and Ruttan also noted that the flow of new inputs had the effect of enhancing the differential productivity of college graduates in relation to lower level of education. A farmer with higher level of education would therefore be expected to avail himself for a loan more easily and in larger amount than that with lower level of education or no education at all (Table 4.6).

Table 4.6: Education and Formal Credit use in Vihiga

Education Level	Used Formal Credit (%)	Never Used Formal Credit (%)	Total (%)
None	12.5	87.5	100
Primary	28.6	71.4	100
Secondary	84.6	15.4	100

Source: Survey Results, 1989

Table 4.6 reveals that as the level of formal education increases the tendency to use formal credit also increases. For instance, out of all the farmers that used formal credit only twelve percent had no formal education while eighty-four percent had secondary school education. It is therefore important to assert here that the low level of formal education of the farming community was one of the factors that inhibited the use of formal credit.

(c) The Farmers' Occupation

The main occupation for seventy-two percent of the farmers was full-time farming. The other twenty-eight percent of the farmers were civil servants that is teachers, military/police and artisans. The full-time farmers reported that farming provided limited and irregular income. It is likely that the irregularity in farm income reduced farmers' use of formal credit due to poor repayment capacity (Table 4.7).

Table 4.7: Occupation vis-a-vis Formal Credit Use

Main Occupation	Used Formal Credit (%)	Never Used Formal Credit (%)	Total (%)
Teacher	32	68	100
Artisan	48	52	100
Military/Police	12	88	100
Full-time farmers	8	92	100

Source: Survey Results, 1989

Table 4.7 shows that the type of occupation a potential loanee had, had a bearing on the ability to make use of formal credit. It is also the case that the full-time farmers make very limited use of formal credit. This trend should not be allowed to continue in the small scale farm sector. Efforts should therefore be undertaken to increase the supply of formal credit to the farmers in order to increase agricultural productivity.

(d) Land Ownership and Acquisition by Farmers

The average land owned per household was 0.4 hectares with a mode of 0.6 hectares, a minimum of 0.2 hectares and a maximum of 4.0 hectares. In the case of large land ownership the land parcels were not consolidated. These figures indicate that there is a problem of land scarcity. About eighty-five percent of the farmers reported that they were born in the area and had always

lived there. The absence of farmers who had migrated into the area confirmed the seriousness of land scarcity.

Table 4.8 shows the ages of the farmers interviewed. Although both men and women participated in the farming business as evidenced by the fact that 87% of the farmers

were men and 13% were women, legal land owners were only men.

Since the formal lenders required land title deed as collateral women were precluded from formal credit acquisition.

The land cultivated was acquired through either inheritance, purchase or renting. Some of the

farmers did not officially own the land that they cultivated. For instance 22.5% of the farmers were

cultivating land parcels that had no land title deeds. This means that this proportion (22.5%) of farmers could

not have access to formal credit due to lack of collateral (land title deed).

Table 4.8 shows that all of the farmers were interviewed.

(e) Size of the Household

A household had an average of 8 people, a minimum of 2 people and a maximum of 15 people. The land sizes in

Vihiga Division were very small though population was high. This indicated a high population pressure on land.

Precisely the population density was more than 700 persons per square kilometre with a population growth

rate of about 4.8% per year. This means that the number of landless people was likely to increase coupled with a

proportionate increase in the number of people who would not make use of formal credit.

(f) Age of the Head of the Household

Table 4.8 shows the ages of the farmers interviewed and the use of formal credit by the various age groups.

Table 4.8: Age Distribution of Sample Farmers and the use of Formal Credit

Age Group (Years)	No. of Farmers	Percentage of all Farmers Interviewed	Percentage of All the Farmers that Used Formal Credit
20 - 40	19	30	54.2
41 - 60	23	36	29.3
61 - 80	22	34	16.7
Total	64	100	

Source: Survey Results, 1989.

Table 4.8 shows that all of the farmers were above the age of 20 years. The age factor here is important as far as credit acquisition from formal lenders is concerned. This is because credit institutions do not provide credit to people without adequate security. Table 4.8 shows that out of all the farmers that used formal credit 54.2% were in the age category 20 to 40 years. This means that this category had a greater proportion of farmers that could offer tangible security. The security could be coupled with support from the off-farm income since this category of farmers were also likely to be having some other sources of off-farm income.

These findings mean

(g) Sources of Off-farm Income

Besides farming, the other sources of income for farmers were salaries or wages earned, returns from non-farm businesses and remittances from urban and non-urban friends and relatives. The credit institutions used off-farm income as one of the major determinants of the repayment capacity. This is because farming activities are associated with high risks and uncertainties that make farm income irregular. Table 4.9 shows a cross tabulation of annual off-farm income and credit use.

Table 4.9. Off-farm Income vis-a-vis formal Credit Use

Off-farm Income Category (Kshs.)	Number of Farmers	Percentage of all the Farmers Interviewed	Farmers in the Given Income Category that used Formal Credit (%)
0 - 1000	25	39.1	0.0
1001 - 2000	15	23.4	46.7
2001 - 3000	13	20.3	61.5
3001 - 10000	11	17.2	82.0
Total	64	100.0	

Source: Survey Results, 1989

Table 4.9 reveals that the use of formal credit increased proportionately with the level of off-farm income. For instance, none of the farmers in the income category of Kshs. 0 to 1000 used formal credit while 82 percent of the farmers in the income category of Kshs. 3000 to 10000 used formal credit. These findings mean

194. The inputs used in crop production are fertilizers, seeds and crop protection chemicals. The most important input here is fertilizer. This is because there is land scarcity which means that the same piece of land has to be used over and over again. This is because there is land scarcity which means that the same piece of land has to be used over and over again. This is because there is land scarcity which means that the same piece of land has to be used over and over again.

that the level of off-farm income determines the farmers' ability to use formal credit. This is possibly because of the fact that the willingness to borrow is increased considering that the risk of losing the collateral (land) is reduced by the off-farm income. The off-farm income could be used to repay the loan in case the enterprise failed to generate enough returns for repayment. Further, the credit institutions used off-farm income as one of the measures of repayment capacity. Thus, farmers with more off-farm income had their credit applications approved easily. It is therefore important to note that credit was provided mainly on the basis of repayment capacity. Accordingly, it is probable that whether credit was used for agricultural purposes or not was not a major concern especially for the Commercial Banks. It is also likely that the eligibility criteria enhanced diversion of agricultural credit funds. In view of the foregoing results effective loan use monitoring by the government is imperative.

4.3 Farm Enterprises

The major farming activity in Vihiga Division is crop production. Livestock production is also practised although this is not as widespread as crop production. Both cash crop and food crop production are undertaken. The food crops produced are maize, beans, potatoes, groundnuts, millet and sorghum. Maize is the staple food crop of the area. The cash crops produced are coffee and

tea. The inputs used in crop production are fertilizers, seeds and crop protection chemicals. The most important input here is fertilizer. This is because there is land scarcity which means that the same piece of land has to be used several times continuously. This being the case there is a likelihood of depletion of soil fertility. In order to maintain the soil fertility the use of fertilizers is imperative.

Livestock production especially zero-grazing of dairy cattle is practised but to a very small degree. Whereas all the farmers interviewed planted at least one crop, only three percent of the farmers (two farmers) had improved dairy cattle. These cattle were kept under zero-grazing units.

Since dairy cattle are heavy feeders, a limitation of credit funds is the likely factor that precluded the practice of zero-grazing of dairy cattle. This is because there were limited or no own-funds for the purchase of the required feeds and drugs. In order to alleviate this situation credit should be provided in form of dairy cattle coupled with some cash package for the purchase of inputs. The most important inputs as far as dairy production is concerned were feeds and chemicals, that is the drugs.

Although crop production was practised by all the farmers, the crops were not performing well. The poor yields are necessary. Thus, agricultural extension should be enhanced to make farmers aware of the

performance could be seen from some coffee fields that were improperly cared for as exemplified by poor weeding. If the coffee co-operatives could perform their duties effectively by providing the required inputs on time coffee production could be improved. Similarly, other crops like maize and tea were not performing well (Table 4.10).

Table 4.10: Expected Yields and Actual Yields for Various Crops in Vihiga Division

Crop Type	Expected Yield ¹ (Kg/ha)	Actual Yield ² (Kg/ha)	Actual Yield Expected Yield x 100
Maize	3930	2790	71
Sorghum	1800	720	40
Finger millet	720	411	57
Beans	1318	720	55
Groundnuts	1450	770	53

Sources: 1. Central Bureau of Statistics, 1989
2. Survey Results, 1989

Table 4.10 reveals that the actual yields are much lower than the expected yields. This shows that there is inability to utilize the agricultural potential of the area fully. Subsequently, there is low productivity of land in the area. In order to increase agricultural production, especially crop production, technical assistance is necessary. Thus, agricultural extension services should be enhanced to make farmers aware of the

proper crop husbandry and the implication that accrue to it. Farmers should also be encouraged to use improved farm inputs such as fertilizers, improved seeds (especially for maize) and crop protection chemicals. Since the use of improved inputs requires that the said inputs be purchased, provision of credit is imperative. This implies that the credit markets should facilitate the credit use by farmers. This will require reevaluation of the terms and conditions for providing credit as indicated in this text.

4.4 Farmers' Participation in the Credit Markets

This section presents the extent to which farmers participated in these credit markets as well as the problems they experienced and their perception of the credit markets.

Eighty-three percent of the farmers interviewed applied for loans from either one or both of the agricultural credit sources. Conversely, seventeen percent of the farmers interviewed never applied for credit from any of the credit sources. The purposes for which credit was applied for were as in Table 4.11 below:

Table 4.11: Purposes for which Credit was Applied for

Purpose	Percentage of Applicants
Purchase of farm inputs	73.6
Non-farm business	10.5
Buy land	3.8.0
Education expenses	3.4
Ceremony	2.3
Buy cattle	1.1
Food/clothing	1.1
Total	100.0

Source: Survey Results, 1989.

The main purpose for which credit was applied for was the purchase of farm inputs. This indicates that the farmers were aware of the importance of using improved inputs, and that credit was needed to improve agricultural production. Fifty-five percent of the loan applicants received credit from the informal lenders while the other 45% received credit from the formal credit lenders (Table 4.12).

Source: Survey Results, 1989.

Table 4.12 reveals that within the group of formal lenders the cooperative societies had the biggest number of loanees. In the group of informal lenders the Village Savings and Credit Associations (VSCAs) had the next number of loanees. In view of these findings it

Table 4.12: Sources of Agricultural Credit

Credit Source **Percentage of Credit Recipients that used the Credit Source**

1. Formal Credit Sources

Commercial Banks	3.4
Kenya Tea Development Authority	8.2
Hortiequip Company	11.8
Cooperative Societies	14.8
Agricultural Finance Corporation	1.1
Action Aid-Kenya	2.3
PfP/Kenya	3.4

2. Informal Credit Sources

Relative/Friend	18.1
Local money lender	15.3
Commodity Trader	2.6
ROSCA ^a	19.0

3. Both Formal and Informal Sources (Various combinations)

30.0

a. Rotating Savings and Credit Associations

Source: Survey Results, 1989

Table 4.12 reveals that within the group of formal lenders the cooperative societies had the biggest number of loanees. In the group of informal lenders the Rotating Savings and Credit Associations (ROSCAs) had the largest number of loanees. In view of these findings it

TABLE 4.13: Type of Collateral Required in all loans is important to note that the cooperative societies and the ROSCAs should be strengthened in order that they serve more farmers. This can be done through government technical and financial assistance. This contention is based on the fact that the said credit sources have limited financial resources.

Seventy-eight percent of the farmers had land title deeds, although only two percent had indeed used land title deeds as security to obtain credit from the credit institutions. The failure to use formal credit was due to the fact that the credit institutions required land title deeds as collateral which most farmers could not avail due to the fear that their land could be sold in case of failure to repay the loan. Another factor underlying the limited use of formal credit was lack of awareness besides the limited level of extension services provided by the credit institutions.

Whereas it is asserted that only a minority of the farmers used formal credit, the amount of credit from the formal credit markets exceeded that from the informal credit markets. In both the formal and informal credit markets fifty-one percent of the loans were disbursed in form of cash payments. Farmers provided collateral for the loans obtained as indicated in Table 4.13 below.

100.5

Table 4.13: Types of Collateral Required by all Lenders

Type of Collateral	Percentage of Lenders that Required it
Co-signature	61.5
None	26.9
Land title deed	6.4
Group collateral	3.8
Land	1.4
Total	100.0

Source: Survey Results, 1989

The collateral requirements were consistent with the fact that most lenders were informal lenders and did not require land or land title deed as collateral. This explains the unexpected low percentage of lenders requiring land title deed as collateral.

All the loans granted were not used for the purposes they were initially intended for. The reasons for this diversion of credit funds were as shown in Table 4.14.

Table 4.14: Reasons for Diversion of Funds

Reason	Percentage of Borrowers
Loan inadequate	53.5
Intended purpose unproductive	39.5
No reason provided	7.0
Total	100.0

Source: Survey Results, 1989.

Table 4.14 reveals that the major reason for the diversion of credit funds was the inadequacy of the credit provided. Since the main lenders were informal lenders and the main purpose for which credit was required was to purchase farm inputs, the implication is that the informal lenders did not satisfy the farmers' needs for credit and farming was effectively rendered less lucrative. Thus, credit might have been then diverted to immediate consumption. This is because farmers were not using improved inputs to the desired level and the resulting output was limited. The other reason for diversion of credit funds was because the intended purpose was later perceived to be less productive. The farmers asserted that this was because some times they were given loans after a rise in the input prices compared to what the prices were at the time of loan application. Accordingly, some farmers considered formal credit unproductive. In most cases loan repayments were made in cash except for Kenya Tea Development Authority and Hortiequip Company where loan repayments were made in form of the crops produced that is tea and french beans.

All the farmers that applied for credit from either one or both of the credit markets reported that the loaning system had several drawbacks (Table 4.15).

Table 4.15: Drawbacks of the Loaning System

Drawback	Percentage of Farmers that Reported the Drawback
Too little money granted	29.2
Late loan disbursement	25.8
Loans granted only in kind	20.1
High interest rate charged	11.1
Too few enterprises financed	6.9
Compulsory timely repayment	6.9
Total	100.0

Source: Survey Results, 1989.

These drawbacks are interrelated and their cumulative effects reduce the productivity of credit as well as discouraging the potential borrowers. Productivity of credit can be reduced in situations where due to these drawbacks farmers are forced to divert the credit funds to some less productive uses. If loans are neither approved in time nor disbursed on time, then both land preparation and input purchase will be delayed. Late planting increases the risk of low yields.

Low yields from projects funded through credit effectively reduce the productivity of credit and subsequently lower the repayment performance. It is important to note here that farmers, like other

businessmen, are rational decision makers and will not be willing to take loans if it is likely that the returns will be low. Credit recipients noted that provision of inadequate credit funds curtailed their purchase of sufficient farm inputs. Another drawback was compulsory timely repayment. This is not an appropriate approach unless a proper evaluation of the problems likely to cause loan delinquency has been undertaken. Evaluation of the likely problems requires that extension and supervisory services be undertaken by the lenders so that in case of problems immediate and appropriate alternatives are sought to alleviate the problems. However, it is important to note that none of the credit recipients reported having been visited by the lenders at any other time besides the time of evaluating the collateral. Enlisting the services of a compulsory timely loan repayment in case of a situation like this observed in Vihiga would be a disservice to the farmers. Under such conditions, an increase in the extension and supervisory services by the credit institutions may be more productive than enforcing repayment which may not be forthcoming.

Farmers also noted that one other drawback of the loaning system was high interest rate. High interest rate herein refers to a situation where an interest rate of say 300% per year was charged. High interest rate was a drawback which was prevalent in the informal

credit market only. In order to alleviate this problem of high interest rates in the informal credit markets, formal credit lenders should be encouraged to increase their supply of credit. Further, some informal credit lenders could be integrated with the formal credit lenders to enhance the supply of credit. Another drawback of the loaning system as reported by farmers was that credit was sometimes made available but with a restriction on the purposes for which it was to be used. This is the inherent fact in the provision of credit in kind. Credit was provided in kind by credit institutions such as the Kenya Tea Development Authority, the Cooperative Societies and Hortiequip Company. Farmers noted that providing credit in kind failed to cater for all the farm operations. Specifically provision of credit in kind did not take into account the need for credit for working capital on the farms. It should be noted that whereas loans in kind encourage their use for the intended purposes, rather than their diversion to other ends, these tied loans may not prevent farmers from selling the inputs and using the proceeds for what they may consider to be more profitable or urgent uses.

Sixty-three percent of the farmers interviewed never applied for credit from any of the formal credit sources. They reported that their failure to apply for formal credit was due to one or more of the reasons in Table 4.16.

Table 4.16: Reasons for Failure to Apply for Loans

Reason	Percentage of Farmers that gave the reason
Did not meet requirements	55.0
Fear of the possibility of foreclosure	37.5
Lack of awareness	27.5
Biased selection of borrowers	10.0
Loans not available	20.0
Have enough own savings	10.0
Cumbersome application procedures	45.0

Source: Survey Results, 1989.

Table 4.16 reveals that farmers were undertaking a pre-application self-screening. The point here is that the farmers who never applied for credit from any credit source had no courage and determination to do so. The reasons attributed to this fear are inherent in the farmers' perceptions of what credit markets are and how they operate. Fifty-five percent of the non-applicants believed they could not qualify for credit, while 37.5% associated credit with the sale of their land. Yet another group could not apply for credit because of supposed biased selection of borrowers, lack of awareness and the high transaction costs attributed to the cumbersome credit application and delivery procedures.

Commercial banks provided credit on the basis of established savings records for at least six months by the potential borrower. However, the process of opening and maintaining a savings account for at least six months and then applying for a loan was lengthy and costly to the farmers. The most critical issue to the farmers was making regular deposits which in effect demonstrated credit worthiness. The three commercial banks discussed in this text had minimum limits on the size of the savings accounts of KShs. 500.00. The eligibility requirements for the establishment of current accounts were even further beyond the reach of most of the farmers. For instance, at least KShs. 1000.00 was needed to open a current account. Sixty-seven percent of the farmers reported that they had savings bank accounts though they could not maintain the accounts effectively by making regular deposits.

The restrictions therefore limited the use of commercial bank credit by most farmers. Infact only 3.4% of the farmers interviewed had used commercial bank credit. The farmers that had used commercial bank credit also had other ties with the commercial banks through non-farm activities and sources of income. Thus, the general limitation posed by the fact that bank credit was available mainly to those who already had some type of relationship with a bank is quite restrictive. Further, the repayment schedules applied by the banks

Lack of awareness, biased selection of borrowers and were serious bottlenecks to full-time farmers. The banks possession of enough own savings contributed to the required that repayment begin within one month of loan disbursement yet it took longer than one month for the majority of the farmers reported that they had not agricultural investments to produce some marketable output. This means that the borrower had to repay from income of credit markets as well as the terms and other sources of income. This repayment schedule precluded farmers without other sources of non-farm income. The extension staff from the Ministries of Agriculture and Livestock Development were supposed to

The most critical requirement as far as eligibility criteria was concerned was the requirement that the borrowers provide land title deeds as collateral. Providing land title deeds as security for loans was a difficult problem for the farmers in Vihiga Division. About twenty-three percent of all the farmers interviewed did not officially own the land that they farmed (i.e. had no land title deeds). The other farmers could not pledge land title deeds because of the fear of the possibility of foreclosure. The requirement that land title deed be provided as collateral totally precluded women as borrowers because women in Vihiga Division did not formally own the land. It is important to note here that the loan policies or lending terms and conditions should be made compatible with the agricultural production and investment cycles. This is in order that they cater for credit worthy farmers who may not be able to avail land title deed as collateral.

to the office of the credit institution for

Lack of awareness, biased selection of borrowers and possession of enough own savings contributed to the failure of some farmers to apply for credit. Twenty-seven percent of the farmers reported that they had not applied for credit because they were not aware of the existence of credit markets as well as the terms and conditions for obtaining credit. It is important to note that the extension staff from the Ministries of Agriculture and Livestock Development were supposed to provide both technical and financial advice to the farmers. However, all the farmers interviewed reported that they had not received financial advice from the extension staff. The extension staff provided only technical advice if any. It is therefore suggested that efforts should be undertaken to create awareness among farmers and also to identify the potential borrowers.

Cumbersome application procedures also discouraged farmers from applying for credit. Forty-five percent of the non-applicants reported that they did not apply for credit because of the time and money consuming application procedures. Most credit institutions were situated in Kakamega town and as such farmers had to make several trips to Kakamega town before having access to formal credit. Farmers reported that an average of four trips had to be made to and from Kakamega town when one was soliciting formal credit. Farmers had to make these trips to the office of the credit institution for

different purposes. Such purposes included the purchase, collection, filling or submitting of prescribed loan application and appraisal forms to the credit institutions. The other purpose was to enquire whether the loan application was rejected or accepted. After establishing the approval of the loan application the next issue was to find out whether the cheque or authority to incur expenditure was ready. The situation was made worse by the fact that there was uncertainty about when credit funds would be "on hand" even if the application was approved. For a small scale farmer located in Vihiga Division, it was costly making such trips to Kakamega town where offices of the credit institutions were located. It was also quite expensive in terms of time and money.

In order to reduce or eliminate pre-application self-screening, farmers should be trained on how to use credit productively. This is because it is scarcity of credit and a lack of purposeful lending and management skills that most likely lead to loan delinquency and the associated pre-application self-screening by the rest of the farmers. Purposeful lending refers to a correctly designed loan given for a feasible economic activity which generates enough surplus to repay the debt and develop a viable profitable enterprise. The farmers should be trained because they need to improve their money management skills. Further, the farmers need to

improve their ability to organize thoughts and information about the relationship among the key elements of their economic activity such as supply, production, marketing and financial decision making. During the training confidence should be instilled in the farmers so that they could borrow money without fear of losing their small land parcels. The training need not be vigorous, it can take the form of agricultural field days or meetings held by local leaders.

Another approach to solving the problem of pre-application self-screening and loan delinquency could be providing loans to farmers coupled with technical assistance and supervision. This could enable monitoring the use of credit so that in case of enterprise failure both the borrower and lender know its causes and could solve the problems that accrue to it appropriately. Supervision and technical assistance can be expensive since they raise the lender's transaction costs. However, these costs can be reduced if lenders liaise with the agricultural and veterinary extension staff.

Tight and rigid eligibility criteria was a major factor that reduced farmers' use of formal credit. In order to alleviate this problem loans should be given to groups that can ultimately distribute to their members. This is in order that group collateral rather than land

farmers who otherwise would be excluded. Finally, small borrowers can benefit because farmers

title deed is used as collateral. When group collateral is used joint liability could reduce default risks. This is because through groups, peer pressure could be invoked to force recalcitrant borrowers to repay. This is more applicable to Vihiga Division because there are many groups both for men and women, though women groups predominate. These groups were involved in credit lending and farmers had preference for them. Farmers noted that whereas these groups provided credit on fair terms and conditions compared to the formal credit sources, the credit provided was not enough to meet all the credit needs. This is because these groups had limited financial resources. In view of the foregoing, the groups should be strengthened possibly by government financial support.

Group lending has various advantages to both lenders and borrowers. Firstly, group lending reduces default risks because of joint liability. Secondly, loan transaction costs per unit of money lent are reduced by making one sizable loan rather than a number of small individual loans. Thirdly, technical services can be introduced more cheaply than if they were provided to individuals. Essentially efficiency of providing technical services can be increased. Fourthly, scarce manpower can be spread to more loanees than if individual loans were made, and thus provide institutional credit to the farmers who otherwise would be excluded. Finally, the small borrowers can benefit because borrower

Small borrowers had an off-farm income of greater than transaction costs for group loans will be less per unit than 3,000.00 per year. Most of the formal borrowers of money borrowed. Individual borrower transaction costs are high because an individual has to incur costs of interest, time lost, transportation, commissions and loan fees. It is important to note that these costs can exceed the actual interest charges paid by the small borrowers. This indicates that the formal lenders preferred borrowing costs for a group, on the other hand, are kept low because only a few designated group leaders such as the chairman, secretary and treasurer spend time negotiating the loan.

4.5 Comparison of Formal and Informal Credit Markets

In this section a comparison of the credit markets is done on the basis of credit market operations, terms and conditions as well as loan sizes. The application procedure for credit in the informal credit market was quite simple compared to that in the formal credit market. In view of the fact that terms and conditions were discussed in sections 4.1.1.3 and 4.1.1.4 it is only worth noting that terms and conditions were very tight and rigid in the formal credit market as compared to the informal credit market.

Forty-six percent of the formal credit recipients had secondary school education while only 18.5% of the informal borrowers had secondary school education. Most informal borrowers had an off-farm income of less than KShs. 3,000.00 per year. Thirty-seven percent of all the

formal borrowers had an off-farm income of greater than KShs. 3,000.00 per year. Most of the formal borrowers were employed, some of whom were earning regular monthly salaries. This implies that the Credit Institutions provided credit to farmers that could finance the intended investments from other sources other than the farm. This indicates that the formal lenders preferred the loanee who also obtained off-farm income. Thus, farmers that acutely needed credit were least cared for. This was possibly due to the risky nature of the farming business and the need to ensure that the potential borrower had good repayment capacity. However, this approach concentrated loan funds in the hands of only those that had some source of regular off-farm income. This approach therefore reduced the use of formal credit by the farmers without sources of off-farm income. Giving loans to persons who are able to finance such investments from other sources is in fact misallocation of the credit funds.

It is argued here that the major concern should be viability of the agricultural project to be financed rather than off-farm income and collateral. Seventy percent of the informal borrowers had a value of gross farm output of less than KShs. 3,500.00. In the category of formal borrowers 33.3% had a value of gross farm output of greater than KShs. 3,500.00. Most formal borrowers used improved farm inputs such as fertilizers,

crop protection chemicals and improved seeds. This was the fact underlying the high value of gross farm output from the formal borrowers compared to the informal borrowers and the non-borrowers. This is an indication that the use of improved inputs was reduced by the lack of formal credit.

The number of farmers that used credit from the informal credit market exceeded the number of farmers that used credit from the formal credit market. Fifty-five percent of the borrowers used credit from the informal lenders while forty-five percent of the borrowers used credit from the formal lenders. Overall only thirty-seven percent of the farmers used formal credit.

Most of the farmers using agricultural credit, especially informal borrowers claimed to have obtained credit from more than one source. This was because of the limited ability of the lenders to satisfy all the credit needs of borrowers and possibly because of the inability of the borrowers to convince the lender to finance them completely. The inadequacy of credit supplied was shown by the fact that inputs such as improved seeds, fertilizers and crop protection chemicals were used to a very limited extent though the major purpose for soliciting credit was for the purchase of these inputs.

The borrowers preferred informal credit lenders to formal credit lenders.

the formal lenders. However, the informal lenders could only supply the farmers that actually obtained formal credit. The predominance of informal lending despite its inability to satisfy credit needs was an indication of the limited use of formal credit. It is the limited use of formal credit that precluded the purchase of improved farm inputs and subsequently led to low productivity of land in the area. Thus, restrictions on borrowing from the formal sources precluded intensive land use or farm development.

The volume of formal credit exceeded the volume of informal credit. Although the average loan size in the formal credit markets was KShs. 3,985.00. in the informal credit market it was only KShs. 410.00. Thus, as already stated informal credit could not meet all the farmers' credit needs due to the small loan sizes. In view of these it is most likely that formal credit provided may be sufficient to cover farmers' credit needs. Hence formal credit provision should be encouraged through government monitoring to reduce diversion of agricultural credit. The government should also undertake to strengthen co-operatives and informal lenders.

4.6 Regression Analyses

Regression analyses were undertaken in order to study the relationship between the amount of formal credit actually obtained and the factors affecting it. Thus,

only the farmers that actually obtained formal credit were considered. The said farmers constituted only thirty-seven percent of all the farmers interviewed. The factors thought to affect the amount of credit actually obtained were farm size, off-farm income, inputs used in the production process, marketed surplus and the education level of the farmer. The regression models used in the analysis are as specified below:

$$\ln Y = \ln A + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + b_4 \ln X_4 + b_5 \ln X_5 + b_6 \ln X_6 + U \quad (4.1)$$

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + U \quad (4.2)$$

Where:

Y = Amount of formal credit actually obtained (KShs.)

lnA, a = constant term (intercept)

b_i (i = 1, 2, ..., 6) coefficient attached to explanatory variables, (X_i).

X₁ = Farm size (in hectares)

X₂ = Value of the marketed surplus

X₃ = Expenditures on fertilizers

X₄ = Age of the Head of the Household (in years)

X₅ = Education level of the farmer

X₆ = Off-farm income

U = Error term

Six explanatory variables were chosen a "priori" as indicated above. However, when the regression was carried out it was found that there was a multicollinearity problem. The multicollinearity problem was shown by the high R² values of 0.82 and 0.86 respectively coupled

Further, age did not constitute any of the with the none significance of most of the coefficients of credit worthiness. The variable, expenditure of the explanatory variable as shown in appendix IIa. In order to solve the multicollinearity problem it was decided that some explanatory variables be dropped. Firstly, the simple correlation coefficient of .85 between it and the value of the marketed surplus was high indicating a high correlation between it and the value of the marketed surplus. Secondly, the value of the simple correlation coefficients and the standard errors of the regression coefficients were used to determine the variables to be dropped. Hence a correlation matrix for all the variables used was worked out. This correlation matrix is shown in appendix IIb.

The decision to drop some variables was based on the fact that high (absolute) values of simple correlation coefficients between two explanatory variables indicates that one of the variables may be omitted from the regression. Further, a variable should be dropped only if the standard error of the regression coefficient exceeds the absolute size of the estimated regression coefficient and then only if there are no logical grounds for including the variable. On examination of the correlation matrix, it was found that the variables: age and education level of the farmer as well as expenditures on fertilizers, off-farm income and value of the marketed surplus were correlated.

Accordingly, two variables, age and expenditures on fertilizers, were dropped. The variable, age, was dropped on the grounds that its standard error, 92.70, was greater than the absolute value, 72.21, of the regression

coefficient. Further, age did not constitute any of the measures of credit worthiness. The variable, expenditure on fertilizers, was dropped on the basis of the following reasons:

Firstly, the simple correlation coefficient of 0.65 between it and the value of the marketed surplus was high indicating a high correlation between it and the value of the marketed surplus. Secondly, the value of the marketed surplus was used as one of the measures of credit worthiness by the credit institutions. As such it had a direct effect on the amount of credit actually obtained. This is in view of the fact that before the credit institutions granted credit they had to evaluate the financial viability of the project to be funded. This included a projection of the expected returns which in this particular respect are represented by the value of the marketed surplus because there is fungibility of credit. Further, the pledging of the crop to be produced was accepted as collateral by the co-operatives, K.T.D.A. and Hortiequip Company. Thirdly, higher values of farm output occurred as a result of higher expenditure on fertilizers. This is in view of the fact that to get more crop output per unit of fixed land use of fertilizers is imperative. Since the value of the marketed surplus was calculated by aggregating the value of the marketed crop output and livestock output there were no logical grounds for including expenditure on fertilizers in the regression model. A final regression was therefore done using the amount of credit actually obtained as the

dependent variable. The regression results are given in Table 4.17. Table 4.17 provides the regression results in form of coefficients and the associated standard errors as well as the t-statistics. Using these regression results the

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dependent variable with the explanatory variables being farm size, value of the marketed surplus, education level of the farmer, and off-farm income.

4.6.1 Regression Results

Table 4.17 provides the regression results in form of coefficients and the associated standard errors as well as t statistics. Using these regression results the hypotheses stated in Section 1.5 were tested at the 5% level of significance.

Table 4.17: Results for the Regression Models

Variable Name (and Constant)	Multiple Linear Regression Model			Log-Linear Regression Model		
	Regression Coefficient	Standard Error of the Coefficient	t Statistic	Regression Coefficient	Standard Error of the Coefficient	t Statistic
Constant	(a) -7292.15	2496.11	-2.92	-8.23	3.04	-2.71
Farm Size (X ₁)	-8.04	8.43	-0.95	0.05	0.33	0.16
Value of the marketed surplus (X ₂)	2.81	1.16	2.43	0.95	0.43	2.19
Education level of the farmer (X ₃)	483.80	175.90	2.75	0.64	0.26	2.53
Off-farm Income (X ₄)	2.99	1.03	2.90	0.99	0.34	2.88
R ²	0.78			0.73		
F [d.f]	16.63 [4, 19]			13.24 [4, 19]		
Number of Observations (n)	24			24		

Source: Survey Results, 1989

The estimated equations for the amount of credit actually obtained by the farmers are as given below:

$$\ln Y = -8.23 + 0.05 \ln X_1 + 0.95 \ln X_2 + 0.64 \ln X_3 + 0.99 X_4 \quad (4.3)$$

$$Y = -7292.15 - 8.04 X_1 + 2.81 X_2 + 483.80 X_3 + 2.99 X_4 \quad (4.4)$$

Where Y is the amount of credit actually obtained and X_1 to X_4 are as defined in Table 4.17.

The choice of the regression model that provides the best fit for the data was based on the size of the coefficient for multiple determination (R^2) and the size of the F value. Since the multiple linear regression model has larger values of both R^2 and F compared to the log-linear regression model, it provides the best fit for the data. As such the multiple linear regression model is used in the discussion of the results.

The regression results reveal that the coefficients corresponding to the value of the marketed surplus (X_2), education level of the farmer (X_3), and off-farm income (X_4) were statistically significant at the 5% level. The coefficient corresponding to farm size (X_1) was not significant at this level. The value of the coefficient of multiple determination (R^2) is 0.78. Since R^2 provides an overall index of how well a multiple regression fits the data, such a value of R^2 means that the fitted equation explained about 78 percent of the variation in the amount of credit actually obtained.

The F statistic has a value of 16.63. This statistic refers to the ratio of the explained to the unexplained variance and has degrees of freedom as $k-1$ and $n-k$. Where k refers to the number of explanatory variables plus the intercept and n refers to the total number of

the observations. This statistic tests the null hypothesis that all the coefficients of the regression other than the intercept are zero. It therefore tests the significance of the regression as a whole in testing for the existence of a linear relationship between the dependent variable and the explanatory variables specified by the model. If the calculated F ratio exceeds the tabulated F value for a particular level of confidence, then the null hypothesis of no dependence on the explanatory variables is rejected. If so, the evidence indicates that not all regression slopes are zero, and the model therefore has some explanatory power.

Comparing the calculated value of the F ratio of 16.63 to the tabulated F value of 2.90 at a 5% level of significance and the degrees of freedom as [4,19] it is clear that the overall regression is statistically significant. Subsequently, all the regression coefficients are not zero. Similarly, R^2 is both large and significant in terms of the F test. Hence, the hypothesis that all the regression coefficients are zero is rejected, meaning that the model used here has adequate explanatory power.

The t statistic is the ratio of the estimated regression coefficient to its standard error. The t statistic has $n-k$ degrees of freedom where n refers to the total number of observations and k refers to the total number of explanatory variables plus the intercept. This ratio determines the significance of the

coefficients. In general the null hypothesis that the coefficient is zero is accepted if the absolute value of the t ratio is less than the t ratio corresponding to a particular level of significance and it is rejected if the absolute value of the t ratio exceeds this value. Acceptance of the hypothesis means that the coefficient is not significant, that is the dependent variable is not linearly dependent on the relevant explanatory variable. Conversely, rejecting the hypothesis means that the coefficient is significant, that is the dependent variable does depend linearly on the relevant explanatory variable.

The regression results show that the coefficient for education is positive and significant at the 5% level of significance. The implication is that the education level of the farmer has an influence on the amount of credit actually obtained. Thus, farmers with higher levels of education are expected to obtain more credit. This is in view of the fact that farmers with higher levels of education are more aware of the existence of credit institutions and the likely benefits from the use of credit. Accordingly, farmers with higher levels of education avail themselves more easily for credit and in larger amounts than those with lower levels of education.

Another finding is that the coefficient for off-farm income is positive and significant at the 5% level of

significance. This means that people with more off-farm income are more likely to obtain greater amounts of credit. It is important to note here that theoretically it would be expected that off-farm income should vary inversely with the amount of formal credit actually obtained. This is because farmers with more funds coming from non-farm activities would be expected to invest some of the off-farm income in the farm. This being the case farmers with more off-farm income would solicit and subsequently receive less credit funds compared to those with less off-farm income. However, the terms and conditions of the credit institutions were such that those farmers with more off-farm income received more credit funds. The explanation for this is that the credit institutions considered off-farm income a better indicator of repayment capacity. Further, the farmers with more off-farm income felt more free to apply for more credit because they could repay from their off-farm income and had no fear of the possibility of foreclosure in case of enterprise failure.

4.6.2 Hypothesis Testing

Two hypotheses were tested in this study. The tests were done on the basis of t statistic at the 5% level of significance. In view of the nature of the stated hypotheses two-tail tests were conducted. Thus, a tabulated t value of 2.09 at the 5% level of significance and 19 degrees of freedom coupled with the calculated t

ratios in Table 4.17 were used.

The first hypothesis stated that "The supply of institutional credit to farmers in Vihiga Division bears no relationship with the total farm size".

The regression results show that the effect of farm size on the amount of credit actually obtained is negative and statistically insignificant at the 5% level of significance. The fact that the coefficient is insignificant means that statistically there is no relationship, that is the coefficient is not different from zero. Thus, at this level of significance this hypothesis cannot be rejected. Since the coefficient for farm size is not statistically significant at the stated level of significance it means that the negative sign has no influence. Thus, farm size bears no relationship with the supply of institutional credit. Theoretically we would expect that farm size would influence the amount of credit actually obtained. This is because large farm sizes would require more funds to cultivate and undertake the necessary production processes compared to small farm sizes. In view of this the insignificant effect of farm size on the amount of credit actually obtained appears enigmatic. One probable explanation for this finding is that the total farm sizes are too small and almost uniform for most farmers. As such, total farm size does not constitute any of the measures of credit worthiness

used by the credit institutions. Moreover, the credit institutions insisted on land title deed as security and off-farm income as a measure of repayment capacity and consequently the amount of credit to be granted to individual farmers.

The second hypothesis was that "The value of the marketed surplus has no relationship with the amount of institutional credit actually obtained".

The regression results show that the coefficient for the marketed surplus is positive and statistically significant at the 5% level of significance. Thus, at the stated level of significance the second hypothesis is rejected. This result means that the value of the marketed surplus has a relationship with the amount of institutional credit actually obtained. Essentially farmers who obtained greater values of the farm output were the same ones that received more credit. Thus, marketed surplus facilitated obtaining further credit. This result is not consistent with the theoretical expectations. Theoretically, we would expect that the higher the value of the marketed surplus the less the amount of credit actually obtained. This is because farmers with greater marketed surpluses would most likely have more own-savings compared to those with less off-farm income. Some of the own-savings would then be invested in farming. This being the case such farmers with greater marketed surpluses would require less credit

funds. The situation in Vihiga can be explained by the following facts: Firstly, there is limited marketed farm output that its value cannot generate enough own-savings to warrant a reduction in the amount of credit applied for and subsequently obtained. Secondly, the credit institutions used the expected returns from the project to be funded as one of the measures of credit worthiness. Thus, the farmers who obtain greater farm output are encouraged to apply for more credit. The relationship obtained has two implications: Firstly, that the farmers' limited use of formal credit cannot be attributed to having enough own-savings. Secondly, the eligibility criteria used by the credit institutions is not consistent with the capabilities of the small scale farmers. The findings above coupled with the fact that expenditure on fertilizers is implicit in the value of the marketed farm output makes one believe that credit can be used to increase productivity of land in Vihiga Division. This being the case an increase in the supply of formal credit to the farmers is imperative. This is in order that the farmers produce enough for subsistence and subsequently commercialize. The issue of increasing land productivity is of special concern because the National economy is dependent on the agricultural sector. Further there is need for self sufficiency in food and other commodities. Thus, the issue of farm credit is critical and needs special attention both in Vihiga Division and elsewhere in the country.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary and Conclusions

Agriculture is the backbone of Kenya's economy and the small scale farm sector produces the bigger proportion of the marketed surplus of farm output. In order to improve land productivity on these small scale farms use of improved inputs is imperative. These inputs must be purchased. Few small scale farmers have enough financial resources to make such purchases. As such the use of credit to purchase the required inputs is necessary.

It is however the case that small scale farmers in Vihiga Division of Kakamega District make limited use of formal agricultural credit as evidenced by low land productivity. In order to evaluate this problem the following objectives were set:

- (1) Identify the sources and channels for both formal and informal agricultural credit.
- (2) Describe the credit market operations including examining the eligibility criteria and repayment performance.
- (3) Describe the characteristics of the borrowers.
- (4) Examine the supply situation and assess the factors determining acquisition of agricultural credit.

In order to achieve the aforesaid objectives data were collected using structured questionnaires at two levels. Firstly, sixty-four farmers selected at random were interviewed to provide data on household characteristics, absolute factor endowments, demand for and supply of credit as well as farming activities and the associated inputs and outputs. Secondly, managers or chairmen of all the agricultural credit institutions were interviewed to provide information on loan eligibility criteria, loan application procedures, loan collection mechanisms and repayment performance plus the zones of lender operation.

Descriptive statistics and regression analyses were used to analyse the data. The results of the analysis showed that farmers actually made limited use of formal credit. Only 37% of all the farmers interviewed had used formal credit. The limited use of formal credit was attributed to several causes. First was the lack of awareness. This was attributed to the fact that the formal lenders never took the initiative to make farmers aware of their existence. It is important to note that whereas most formal lenders reported having an extension component in their credit policy, this was not effected in practice. The only time the formal lenders visited the borrowers was when

for example the stage of the planting

Fourthly, high and more eligibility criteria they were going to evaluate the collateral offered or to ask for loan repayment in case of delays in loan repayment or loan delinquency. It is also the case that the extension staff from the Ministries of Agriculture and Livestock Development only provided technical advice if any and no financial advice at all. This aggravated the problem of lack of awareness.

Secondly, the limited use of formal credit was due to high borrower transaction costs. The transaction costs included the transport costs for making several trips to the offices of the formal lenders and the time lost when making these trips. Eleven percent of all the farmers interviewed reported that high interest rate was the most deterrent factor to obtaining credit from the informal credit market.

Thirdly, complicated, cumbersome and time-consuming loan application procedures which resulted in delays in loan approvals and loans not being made available at the required time discouraged most farmers from soliciting credit from formal lenders. The delay in loan approval and subsequent disbursement led to diversion of loans to purposes other than those they were initially intended for and possibly to non-productive uses due to the elapse of the time for the project for which credit was required - for example the elapse of the planting season.

Fourthly, tight and rigid eligibility criteria precluded most farmers from obtaining formal credit. Special mention is made of the unacceptable collateral requirements. Most lenders required land title deeds which most farmers could not avail mainly because they did not have them or because of the fear of the possibility of foreclosure. Due to the possibility of foreclosure some farmers associated credit with the sale of their land parcels. Subsequently, the said farmers refused to apply for credit from any of the credit institutions. Other formal lenders such as the commercial banks required that the potential borrower open an account and operate it for at least six months before being eligible for a loan. It is argued here that the major concern should be viability of the agricultural project to be financed as well as the repayment potential rather than the requirement for land title deed as collateral or opening a savings bank account. The repayment schedules of the commercial banks precluded farmers without other sources of off-farm income from obtaining credit. The requirement that loan repayment commence one month from the date of loan disbursement is not consistent with the cash generating pattern of agricultural enterprises.

The other cause of the limited use of formal credit was the bias in the selection of borrowers. The formal lenders preferred borrowers who had regular off-farm

income such as teachers, artisans and other civil servants. This precluded full-time farmers who seriously needed credit. The biased selection of borrowers was also shown by the fact that those who had higher values of marketed surpluses were preferred to those with lower values of the marketed surpluses of farm output. It is noted with concern that this should not be the case because those with higher values of the marketed surpluses were more likely to be having more own-savings and did not require credit as seriously as those with low values of the marketed surplus of farm output. In respect of these it is argued that the lending criteria should be based mainly upon economic considerations that take into account the need for farm development as well as the assets present at the farm level rather than insisting on off-farm income and land title deed as collateral. The results also showed that Vihiga Division was suitable for both crop and livestock production especially zero grazing of dairy cattle. In spite of the suitability of the area for both livestock and agricultural enterprises these were undertaken to a very limited scale. The cause of the limited undertaking of the said enterprises especially zero grazing of dairy cattle was limited funds.

Finally, the results revealed that there was a predominance of informal lending and that the borrowers preferred informal lenders to formal lenders. In this

connection informal lenders could be used to increase farmers' use of formal credit. This could be achieved by integrating some formal lenders with informal lenders especially the rotating savings and credit associations. In this case group collateral rather than land title deed would be used. Farmers' use of formal credit could be increased because even those without land title deeds would obtain credit. This is in view of the fact that it is the group that would take credit and ultimately distribute to its members. The survey also revealed that there was incompatibility of loan repayment schedules with the cash generating pattern of agricultural enterprises. The provision of credit was not integrated with the supply of farm inputs. Similarly, mobilization of rural savings was not undertaken effectively. This is contrary to the fact that mobilization of rural savings is necessary in order to augment the government supply of credit for agricultural production and other credit needs.

In conclusion, it is noted that very low formal credit goes to the Agricultural sector in Vihiga Division. This is due to the fact that the farmers make very limited use of formal credit. The limited use of formal credit is due to strict and rigid eligibility criteria as well as lack of awareness. Special mention is made of the requirement that loanees produce land title deed as collateral. The land sizes were so small

3.2 Recommendations

that the farmers could not freely use land title deed as collateral. In view of the foregoing it is argued that as land sizes decrease due to an increase in population pressure on land less formal credit will be made available to the farmers. In the event of these circumstances the present credit institutions especially the Agricultural Finance Corporation and the Commercial Banks are not well suited to the provision of credit to the small scale farmers. Only in so far as the recommendations made in this text are applied coupled with other readjustments can the said credit institutions be of adequate use to the small scale farmers. The technical services offered by Hortiequip Company and the Kenya Tea Development Authority may have to be adapted by other credit institutions as appropriate. Further, the acceptance of a minimum land size of 170m² as a justification for a loan from Hortiequip Company is worth consideration by the other credit institutions provided the enterprise undertaken is economically viable. Finally, it is noted that in order to increase farmers' use of credit both the informal lenders as well as the co-operatives should be strengthened. This is because the eligibility criteria for the co-operatives and the informal lenders are consistent with the capabilities of the small scale farmers.

of their loan application, thus unnecessarily

5.2 Recommendations

A number of recommendations emanate from the results of the survey. Firstly, since informal lending was predominant in Vihiga Division, one approach towards solving the problem of farmers' limited use of formal credit is to link up the two credit markets. Funds should be passed from institutional lenders through informal lenders to the farmers. Thus, formal credit markets should boost the funds of some informal credit markets such as the ROSCA's so that these associations could in turn supply these funds to their members and other farmers. Once this is achieved the government should supervise both informal and formal lenders to eliminate any element of corruption. Alternatively, some of the informal lenders could be formalized especially the Rotating Savings and Credit Associations.

Secondly, the transaction costs the borrowers incur especially through transport cost or loss of productive time on several trips to the offices of the credit institutions should be reduced. This can be achieved through streamlining the lending procedure. Once the borrowers fill the loan application forms, the said forms should be processed and the farmers notified immediately about the success or failure of the application. An efficient communication system should be effected so that farmers are made aware of the progress of their loan application. Thus unnecessarily

cumbersome application and credit delivery procedures should be removed by reviewing these procedures.

Thirdly, the eligibility criteria, loan approval decisions and collection mechanisms should be made consistent with the capabilities of the small scale farmers. Thus, where possible repayment period should coincide with the marketing of farm produce. The commercial banks, in particular, should allow a grace period of more than one month for the agricultural loans. In addition, credit should be supplied to groups so that group collateral rather than land title deed is used.

On the basis of the finding that within the group of credit institutions the co-operatives had a bigger share in terms of the credit recipients it is recommended that the co-operatives be strengthened by way of financial and technical support by the government. The cooperatives, churches, non governmental organizations and private individuals should be encouraged to establish savings and credit associations. The associations so formed would enhance the process of savings mobilization. Government participation in the formation of the said associations is imperative and should be in form of technical and financial assistance.

Fourthly, the formal lenders should undertake to provide extension services mainly technical and financial advice as well as supervision to create

awareness among the farmers regarding the existence of formal credit. This can be done through meetings held by local leaders and agricultural field days. In this connection liaison between the agricultural extension staff and the formal lenders is necessary. In case of commercial banks it may be necessary to employ more specialists in agricultural lending in order to augment the expertise for agricultural loan evaluation. Similarly, it is recommended that commercial banks undertake measures to encourage the process of opening savings bank accounts for farmers.

Some farmers in Vihiga Division considered formal credit unproductive. In order to remove this preconceived notion with a view of increasing farmers' use of formal credit the following approaches should be taken. Serious extension efforts should be undertaken by the extension staff in the Ministries of Agriculture and Livestock Development to teach farmers how to obtain credit and use it profitably. Further, during the training confidence should be instilled in the farmers so that as a result the farmers could borrow money without fear of losing their small land parcels. This approach may be a solution to pre-application self-screening by farmers. The training need not be vigorous. It can take the form of agricultural field days or meetings held by local leaders. It is also necessary that the input supply system ensure that the inputs are available to the farmers at the right time,

in the amounts required and of the proper quantity and quality. There should also be a marketing organization which provides a convenient, stable and profitable outlet for the farmers' products.

The fifth recommendation is that whenever credit is provided in kind it should be accompanied with a cash component. Herein, the apportioning should be such that the amount provided in cash is enough to cater for the labour cost and other working capital. Similarly, credit should be linked to individual commodities such as in the case of tea and french beans.

Finally, for credit institutions where repayment performance is poor especially the Agricultural Finance Corporation, efforts must be made through supervisory services to make farmers aware of the importance of using loans efficiently to ensure repayment. The formal credit sources should be encouraged to increase agricultural credit supply. The approach here may be direct government action through directives and monitoring to reduce diversion of agricultural loan funds to non-agricultural purposes. The government should therefore employ specific technical experts that are conversant with agricultural credit lending and then deploy the said experts in all Agricultural Credit Institutions as well as the Central Bank of Kenya to ensure that agricultural credit plays the role it is associated with in development.

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APPENDIX I

AGRICULTURAL CREDIT MARKETS IN VIHIGA DIVISION

Formal Credit Markets

1. Kenya Commercial Bank
2. Barclays Bank of Kenya
3. Standard Chartered Bank
4. Co-operative Bank of Kenya
5. Kenya Tea Development Authority
6. Hortiequip Company Limited
7. Kakamega District Cooperative Union
8. Kakamega District Dairy Cooperative Society
9. Kakamega Teachers Savings and Credit Cooperative Society
10. Wamondo Coffee Cooperative Society
11. Agricultural Finance Corporation
12. Action Aid-Kenya
13. Partnership for Productivity

Informal Credit markets

1. Relatives and Friends
2. Commodity Traders
3. Money Lenders
4. Rotating Savings and Credit Associations

APPENDIX II

Appendix IIA: Coefficients, Standard Errors and T-Values for all the Explanatory Variables Considered a "Priori" for Regression Analysis

Variable Name and Constant	Multiple Linear Regression Model			Log-Linear Regression Model		
	Regression Coefficient	Standard Error of the Coefficient	T Statistic	Regression Coefficient	Standard Error of the Coefficient	T Statistic
Constant	-2556.82	6118.51	-0.42	-4.63	4.06	-1.14
Farm size (X ₁)	-5.07	8.05	-0.63	0.16	0.25	0.62
Value of the Marketed Surplus (X ₂)	2.33	1.20	1.95	0.76	0.33	2.28
Expenditure on Fertilizer (X ₃)	4.70	2.56	1.83	1.05	0.27	3.92
Age of the farmer (X ₄)	-76.21	92.70	-0.82	-1.03	0.89	-1.16
Education level of the Farmer (X ₅)	302.10	208.82	1.45	0.16	0.27	0.63
Off-farm Income (X ₆)	1.92	1.09	1.76	0.40	0.30	1.33
R ²		0.82			0.87	
F [d.f]		13.35[6, 17]			18.66[6, 17]	
Number of Observations (n)		24			24	

Source: Survey Results, 1989

Appendix IIB: Correlation Matrix for all the Variables Considered a "Priori" in the Regression Analyses

	Credit Obtained	Farm Size	Value of the Marketed Surplus	Expenditure on Fertilizers	Age of the Farmer	Education Level	Off- Farm Income
Credit Obtained	1.00	0.05	0.72	0.80	-0.39	0.55	0.77
Farm size	0.05	1.00	-0.02	0.02	-0.12	0.13	0.29
Value of the marketed surplus	0.72	-0.02	1.00	0.65	-0.01	0.22	0.64
Expenditure on Fertilizers	0.81	0.02	0.65	1.00	-0.28	0.40	0.70
Age of the farmer	-0.39	-0.12	-0.01	-0.28	1.00	-0.63	-0.25
Education level	0.55	0.13	0.22	0.44	-0.63	1.00	0.36
Off-farm income	0.77	0.29	0.64	0.70	-0.25	-0.36	1.00

Source: Survey Results, 1989

APPENDIX III

Appendix IIIA: Types of Loans given to farmers by A.F.C. in Kakamega District

Type of Loan	Repayment Period (Years)	Interest Rate Per year (%)	Required Minimum Down Payment (%)	Other Terms and Conditions
Development	5 - 10	12	25	Secured by land title deed
Land purchase	upto 20	12	20 - 40	
Dairy (cattle, milking sheds, milking tools, dip and fencing)	5 - 10	12	-	Secured by land title deed. Repayment through irrevocable payment order made to the Kenya Cooperative Creameries on monthly basis.
Poultry (day-old chicks, poultry unit, working capital for feeds)	feeds 2 years others 4 years Quarterly installments starting after 9 months for layers and 6 months for broilers	13 12	-	Secured by land title deed. For layers, the minimum unit size financed is 500 layers, while for broilers the recommended minimum unit size is 1,000 birds.
Mechanization (for the purchase of tractors and equipment)	5	12	25	Secured by land title deed. The machinery is registered in joint names of A.F.C and loanee and comprehensive insurance on machinery.
Seasonal crop loans for maize	1 season (year) 12 months	14	20	Secured by land title deed. Financed at a rate of KShs. 1,750 per acre.

Source: A.F.C. - Headquarters - Nairobi, 1989.

Appendix IIIIB: Types of Loans Granted to Co-operative Unions and Societies in Kakamega District by the Co-operative Bank of Kenya

Type of Loan	Repayment Period (Months)	Interest Rate % (per year)	Farmers' Contribution (% of Total Cost)	Other Terms and Conditions
Farm input supply scheme (F.I.S.S)	12	5		Grace period is 6 months Acceptable collateral is Hypothecation of stocks and government guarantee
Smallholder Coffee Improvement Project (SCIP) (Working capital provided for farm development)	36	11		Grace period is 48 months Repayment is done in 12 installments on quarterly basis. Collateral is hypothecation of stocks and government guarantee.
S.C.I.P (Factory construction)	102 (8.5 years)	11	25	Grace period is 18 months. Repayment is done in 12 installments on quarterly basis. Collateral is Hypothecation of stock and government guarantee.
Transport (purchase of vehicles and tractors)	24	9	20	Collateral is Hypothecation of stock and government guarantee and log book deposit.
New Seasonal Credit Scheme (N.S.C.S.)	12	11		Collateral is Hypothecation of stock and government guarantee
Co-operative Production Credit Scheme (C.P.C.S)	18	15		Collateral is Hypothecation of stock and government guarantee.

Source: Co-operative Bank of Kenya - Kisumu Branch, 1989.

Appendix IIIC: Terms and Conditions for Obtaining Loans from the Cooperative Union and Societies in Kakamega District

Co-operative	Membership	Source of Funds	Terms and Conditions
Kakamega District Cooperative Union	All societies	(i) World Bank (ii) Co-operative Bank	Full membership in the Cooperative
Maaondo Coffee Cooperative Society	2756	(i) Commission (15%) from the sale of coffee. (ii) Sale of farm inputs (iii) Co-operative Bank	(i) Full membership of the Cooperative (minimum contribution of KShs. 45.00). (ii) Consistent production and selling of coffee through cooperative for the previous three years. (iii) Collateral is co-signor and the crop produced. (iv) Interest rate charged on loan is 18% per year (v) Grace period is 2 years (vi) Repayment period is 3 years.
Kakamega District Dairy Cooperative Society	1681	(i) Ministry of Cooperative Development (ii) Cooperative Bank (iii) Members' contributions	(i) Full membership of the Cooperative (ii) Consistent production and selling of milk through the cooperative

Appendix IIIC Cont'd

Co-operative	Membership	Source of Funds	Terms and Conditions
		(iv) Foreign countries (e.g. Finland)	(iii) Collateral is land title deed (iv) Grace period is 3 years (v) Interest rate charged is 18% (vi) Repayment period is 4 years Mode of loan repayment is either in installment or lumpsum.
Kakamega Teachers' Savings and Credit Co-operative Society	11,286	(i) Members' contributions (ii) Interest received	(i) Full membership for at least 6 months with a minimum contribution of KShs. 600.00.
		(iii) Loan repayments	(ii) Collateral is co-signer and future salary. (iii) Grace period is 1 month (iv) Interest rate is 12% p.a. (v) Repayment period is 12 - 48 months through monthly installments. Credit floor is KShs. 3,000 Credit ceiling is thrice a member's shares subject to a maximum of 5% of the Cooperative's total share capital and reserves.

Source: Survey Results, 1989.

Appendix IIID: Terms and Conditions for the Credit Systems Operated by PfP/Kenya in Kakamega District

	Revolving Loan Fund System	Seasonal Credit System	Individual Credit System
Purpose of Credit	Off-farm activities	On-farm activities	Either off-farm or on-farm activities
Collateral	Group collateral	Group collateral	Land title deed or any other fixed asset
Grace Period (months)	3	12	3 or 12
Interest Rate	15% per year	15% per year	15% per year
Equity Contribution	25%	-	-
Total Loan Period (Months)	36	12	36 or 12
Repayment Period (Months)	30	-	-
Mode of Repayment	Paid on monthly installments for 30 months	Lumpsum	Installment or lumpsum
Credit Ceiling	KShs. 50,000.00	KShs. 50,000.00	KShs. 20,000.00
Other terms and conditions	Group must possess a savings account, be economically oriented and must work with PfP for at least six months. PfP provides financial and technical assistance.	Covers crops like maize. Credit provided exclusively as farm inputs.	Depends on whether it lies in either of the credit systems.
Source of Funds	African Development Fund	African Development Fund	African Development Fund

Source: PfP/Kenya, 1989

APPENDIX IV

QUESTIONNAIRE FOR THE FARMER

C O N F I D E N T I A L

Date of Interview -----

Name of Enumerator -----

1. Respondent's Identification and Background

Information:

Location -----

Sub-Location -----

Village -----

Farmers' Identification Number -----

Respondent's Name -----

Respondent's relationship to the household head

2. Household Census

Number	01	02	03	04	05
Name					
Relation to head					
Age (years)					
Sex 1: Male 2: Female					
<u>Marital Status</u> 1- married 2 - widow 3- single 4 - divorce 5- separated					
<u>Formal Education</u> 1 - None 2 - Primary 3 - Secondary 4 - Tech./College 5 - University					
Total No. of years in school					
<u>Informal Education</u> 1: None 2: Adult education 3 - Farm training 4 - Artisan training					
<u>Main Occupation: Type</u> Regularity of income in the last 12 months 1 - Yes 2 - No					
<u>Second Occupation: Type</u> Regularity of income in the last 12 months 1 - Yes 2 - No					
<u>Work on Farm</u> 1: Regularly 2: Irregularly 3: Never					
<u>If Regular Worker:</u> Monthly wage					
<u>Away in last year:</u> Number of months					
Occupation					

RELATIONSHIP TO HEAD	OCCUPATION CODE
01 - Head (Husband)	01 - Farming
02 - Wife	02 - Teaching
03 - Son	03 - Artisan
04 - Daughter	04 - Other Civil Servant (specify)
05 - Other Relatives	05 - Trader
06 - Non relatives (specify)	06 - Other (specify)

3. Socioeconomic Background of the Household Head

- 3.1 Were you born in this village: 1 - Yes 2 - No -----
If yes, go to 3.2, if No go to 3.3
- 3.2 Have you always lived here? 1 - Yes 2 - No -----
If No, go to 3.3
- 3.3 In which place did you last live and for how long?
Location: 1 - large town 2 - small town 3 - rural village
Period: Number of years ----- Distance (in Km) -----
- 3.4 What was your occupation there? (use codes above) -----

4. Quality of the Household Head's Residence

4.1 What is the construction of the household head's residence in this village? (Fill in the table below).

Roof	<u>Roofing Materials</u>
	1 - Thatch 2 - Tin 3 - corrugated iron 4 - Tiles
Wall	<u>Wall Materials:</u> 1 - mud 2 - straw 3 - brick
	4 - concrete 5 - concrete/mud -----
Floor	<u>Floor Materials:</u> 1 - Earth 2 - Concrete 3 - Timber
Windows	<u>Window Materials:</u> 1 - None 2 - Tin 3 - Wood 4 - Glass

4.2 How much would it cost to build this house today? Kshs.---

5. Credit Information

- 5.1 Have you or any members of this household ever applied for a loan from any source in the last five years?
1 - Yes 2 - No

	Loan Application Order					
	01	02	03	04	05	06
Year						
Purpose(s) /Actual Loan Use						
Type of Lender						
Terms: 1 - written 2 - not written						
Amount Applied for (KShs.)						
Application successful? 1 - Yes 2 - No						
Why? If not successful						
Judgment of Application Procedure						
Type of Payment 1 - Cash 2-Kind 3 - Mixed						
Amount Received (Kshs.)						
Grace Period (Months)						
Repayment Period (months)						
Interest Rate (p.a.)						
Type of collateral required						
Amount paid at maturity						
Amount outstanding (KShs.)						
Reason, if loan was not spend on purposes it was initially intended for						
Judgment of loan disburs- ement period/loan adequacy						
Drawback of the present loaning system						
Reasons for loan delinquency						

<u>Purpose(s)/Actual Use</u>	<u>Type of Collateral Required</u>	<u>Drawback of the Present Lending System</u>
1 - Purchase farm inputs	0 - None 1 - Land	01 - Too little money is given
2 - Buy livestock	2 - Land title deed	02 - Too few enterprises are financed
3 - Buy land	3 - Co- signature(guarantor)	03 - Loans are not available
4 - Non-farm Business	4 - Group signature	04 - Tight and rigid security requirements
5 - Other (specify)	5 - Agricultural produce	05 - Only known people are given
	6 - Other (specify)	06 - Loans are given only in kind
		07 - High interest rate
		08 - Late loan disbursement
		09 - Cumbersome application procedures
		10 - Compulsory timely repayment irrespective of enterprise failure
		11 - Other (specify) _____
<u>Type of Lender</u>	<u>Judgment of Application Procedure</u>	
1 - Relative/Friend	1 - Cumbersome	
2 - Money lender	2 - Good	
3 - Commodity trader	3 - Other (specify)	
4 - ROSCA		
5 - Co-operative	<u>Why if not successful</u>	<u>Reasons for Loan Delinquency</u>
6 - A.F.C	1 - Do not meet requirements	1 - Underfinancing of investment
7 - Commercial Bank	2 - Fund exhausted	2 - Failure of the project
8 - PFP/Kenya	3 - Late application	3 - Low prices of farm produce
9 - Action Aid-Kenya	4 - Other (specify)	4 - Irrationally short maturities
10 - Hortiequip Company		5 - Other(s) (specify)
11 - KTDA	<u>Judgment of Loan Adequacy</u>	<u>Judgment of Loan Disbursement Period</u>
12 - Other (specify)	1 - Enough	1 - On time
	2 - Not enough	2 - Late
		3 - Other (specify)
<u>Reasons for Spending Loan on Purposes it was not Intended for</u>		
1 - Late disbursement of loans		
2 - Loan not enough for the intended purpose		
3 - Other (specify) _____		

Asset Position of the Farmer at the time of the Survey

6.1 Land: Total size of the farm (Acres) -----

Inventory of the Parcel of Land

Parcel No.	01	02	03	04	05	06
Size (in acres)						
Distance from Home (km)						
Soil type						
<u>Method of Acquisition:</u> How						
Year						
Who did?						
From whom?						
Part of original parcel? 1 - Yes 2 - No						
Survey cost						
Original parcel Registered in former owner's name? 1 - Yes 2 - No 3 - Do not know						
Type of Document						
<u>Registration:</u> 1 - Yes 2 - No						
Year						
In whose name?						
Cost						
1 - Yes						
<u>Land Certificate:</u> 2 - No						
In whose name?						
Cost						

Parcel No.	01	02	03	04	05	06
<u>If purchased: Price</u>						
<u>If rented or leased out</u> <u>Type of Payment</u>						
<u>What period (season)</u>						
<u>Cost</u>						
<u>Written condition:</u> 1 - Yes 2 - No						
<u>Ever Pledged or Mortgaged</u> 1 - Yes 2 - No						
<u>Most recent year</u>						
<u>To whom</u>						
<u>Amount</u>						
<u>Written conditions?</u> 1 - Yes 2 - No						
<u>Duration (months)</u>						
<u>Repayment type</u>						

In whose name? Who did? Who has acquired? From whom?

- | | |
|---------------------|--------------------------------------|
| 01 - Head (husband) | 05 - Other Relatives (specify) |
| 02 - Wife | 06 - Non-Relative (specify) |
| 03 - Son | 07 - Financial Institution (specify) |
| 04 - Daughter | 08 - Other (specify) ----- |

To whom pledged/mortgaged

How Acquired

- 1 - Credit institution (specify)
- 2 - Relative
- 3 - Non-relative

- 1 - Inherited
- 2 - Purchased
- 3 - Gift
- 4 - Owned through pledging
- 5 - Rented

Soil Type

- 1 - Very fertile
- 2 - Fertile
- 3 - Poor
- 4 - Very poor
- 5 - Rocky

- 6 - Other (specify) -----

Type of Document

- | | |
|------------------------|----------------------------|
| 01 - Land Certificate | 06 - Purchase Agreement |
| 02 - Letter of Consent | 07 - Inheritance Agreement |
| 03 - Transfer form | 08 - Pledging Agreement |
| 04 - Mutation form | 09 - Renting Agreement |
| 05 - Parcel cards | 10 - Borrowing Agreement |

Repayment/Payment Type

- 1 - Cash
- 2 - % of crop harvest
- 3 - Mixed: cash and kind

6.2 Inventory of Farm Machinery and Equipment

Type of Machine or Equipment (code)							
Number							
Year Acquired							
How Acquired (code)							
Original Purchase Price (KShs.)							
Current Resale Value (KShs.)							

Type of Machine or Equipment

How Acquired

- | | | |
|--------------------|-----------------------------|---------------------------|
| 01 - Hoe | 12 - Coffee husker | 1 - Inherited |
| 02 - Matchet | 13 - Grinding mill | 2 - Purchased |
| 03 - Digging Fork | 14 - Maize sheller | 3 - Gift |
| 04 - Axe | 15 - Water drum | 4 - Owned through pledgi |
| 05 - Spade | 16 - Water tank | 5 - Rented |
| 06 - Pruning shear | 17 - Farm vehicles | 6 - Built/constructed |
| 07 - Wheelbarrow | 18 - Tractor | 7 - Other (specify) ----- |
| 08 - Sprayer | 19 - Bicycle | <u>Location</u> |
| 09 - Ox-plough | 20 - Radio | 1 - On the farm |
| 10 - Ox-cart | 21 - Zero-grazing equipment | 2 - In this village |
| 11 - Donkey cart | 22 - Other (specify) ----- | 3 - Outside the village |

Type of Building

- | | | | |
|------------|--------------------|------------------------|------------------------------|
| 01 - Store | 03 - Chicken house | 05 - cow-shed | 07 - Other farm building |
| 02 - Barn | 04 - Pig-shed | 06 - Zero-grazing unit | 08 - Other Non-farm building |

6.3 Building Inventory

Does the household head or any household member own any of the following buildings?

Type of Building (code)						
Number						
Year Acquired						
How Acquired (code)						
Original Construction Cost (KShs.)						
Approximate Current Construction Cost (KShs.)						
Location						

6.4 Value of any other investment (Kshs.) -----

6.5 Inventory of Livestock Owned on the Farm

Type of Animal	No. Present Today	Average Sale Value	No. of Present Animals Acquired Through			
			Purchase	Inheritance	Gift	Being
Adult Cows:						
Improved						
Local						
Young Milk Cattle:						
Improved						
Local						
Adult Beef Cattle:						
Improved						
Local						
Young Beef Cattle:						
Improved						
Local						
Draft Oxen:						
Improved						
Local						
Adult Sheep/Goats:						
Improved						
Local						
Young Sheep/Goats:						
Improved						
Local						
Adult Pigs:						
Improved						
Local						
Poultry:						
Improved						
Local						

7.0 Outputs and Marketed Outputs of Selected Plots

Plot No.	Crop No.	Crop Type	Measurement Unit	Quantity Produced	Quantity Sold	Price per Unit	To whom	Size of the Plot

<u>Crop Type Code</u>	<u>To Whom</u>	<u>Crop Measurement</u>
1 - Shelled maize	1 - NCPB	1 - 90Kg bag
2 - Dry beans	2 - Co-operative Society	2 - Debe
3 - Coffee berries	3 - Hortiequip Company	3 - 2Kg Kimbo tin
4 - Coffee beans	4 - Mills (Unga Mills)	4 - 1Kg kimbo tin
5 - Green peas	5 - Neighbours	
6 - Dry peas	6 - Local markets	
7 - Tea leaves	7 - KTDA	
8 - Potatoes	8 - Others (specify) -----	

8. How many shillings did you spend on hired labour last year (1988)? -----

9. How many permanent workers did you have during the last 12 months (1988)? -----

10. What was their monthly pay? -----

11 Marketed Outputs
of Livestock Products

	Eggs	Milk
Measurement unit		
Quantity Produced		
Quantity Sold		
Price per unit		
To Whom		

12. Receipts in Form of
Hire/Rent/Wage

Item	Value(Kshs)
Rent on land	
Hire of Animals	
Hire of Implements	
Wages	
Interest received	
Remittance from family members working outside the farm	
House Rent	

Measurement Unit	To Whom
1: Kg	1: local market
2: Tree top bottle	2: Neighbour
3: Gallon	3: Cooperative
4: Tray	4: Schools
5: Single egg	5: Other (specify)

13. Farm Expenses
Use of Inputs for the Selected Crops in the Season

	01	02	03	04	05	06
Parcel No.						
Plot No.						
Crop (Code)						
Did you use any certified seed? 1 - Yes 2 - No						
Measurement Unit						
Quantity used						
Price per unit						
Did you use any manure? 1 - Yes 2 - No						
Cost						

Parcel No.	01	02	03	04	05	06
Did you use any fertilizer? 1 - Yes 2 - No						
Type						
Measurement unit						
Quantity used						
Price per unit						
Did you use any chemicals? 1 - Yes 2 - No						
Quantity (kg or litres)						
Cost						
Did you hire a sprayer? 1 - Yes 2 - No						
Cost						
Did you purchase fodder? 1 - Yes 2 - No						
Cost						
Other cattle feed purchased (specify) -----						
Cost						

<u>Fertilizer Type</u>	<u>Measurement Unit</u>	<u>Crop Code</u>
1 - DAP	1 - 50 Kg	1 - Coffee
2 - CAN	2 - 20 Kg	2 - Tea
3 - TSP	3 - 10 Kg	3 - Maize
4 - NPK	4 - 1 Kg/1 litre	4 - Beans
5 - Other(specify)	5 - Seedlings	5 - Other (monocrop)----
		6 - Maize and beans
		7 - Coffee and beans
		8 - Other crop association(specify) ---

APPENDIX V

QUESTIONNAIRE FOR THE CREDIT LENDERS

Date of Interview -----

Name of Credit Lender -----

Respondent -----

1. What is your area of operation? -----
2. What type of loans do you give? (use the table below)

Loan Type	Loan Size (Kshs.)	Collateral (Codes below)	Interest Rate (p.a)	Grace Period (Months)	Repayment Period (Months)	Purpose (codes below)

Collateral Codes

- 0 - None
- 1 - Land
- 2 - Land title deed
- 3 - Co-signature
- 4 - Group signature
- 5 - Agricultural produce
- 6 - Other (specify)

Purpose Codes

- 1 - Purchase farm inputs
- 2 - Buy livestock
- 3 - Buy land
- 4 - Non-farm business
- 5 - Other (specify)

3. Do you insist on the purpose for which credit is to be used?

1 - Yes 2 - No -----

4. What type of collateral do you prefer? (use codes above) --

5. If the collateral preferred is land, please state the minimum size of land that you require (acres) -----

6. Besides collateral, what other factors do you consider before giving loans (other conditions)?

1 - Seasonal flow of income

2 - Viability of the proposed project

3 - Character and management ability of applicant

4 - Risk bearing ability of the applicant

5 - Repayment capacity

6 - Proposed project must tally with the government agricultural policy

7 - Demand for the intended production i.e. availability of the market

8 - Others (specify) -----

7. What are the loan application procedures?

0 - None

1 - Potential loanees acquires a loan application form and then fills it

2 - Loans officer visits the potential loanee's farm for evaluation

3 - Loan advisory committee certifies eligibility of the loan applicant

4 - Loan forms forwarded to credit officers for approval

5 - References submitted and the collateral offered (e.g. land title) is charged

6 - Farmer informed of where and when to sign loan agreement forms and to collect the loan

7 - Other(s) (specify) -----

8. Composition of the committee for processing loans.

1 - Not applicable

2 - Agricultural Officer, representative of the credit institution and the loans advisory officer

3 - Other(s) (specify) -----

9. Difficulties encountered in the choice of loanees:

1 - None

2 - Disagreement among committee members

3 - others (specify) -----

10. Do farmers make any deposits or contributions? 1- Yes 2- No

11. What is the minimum deposit or contribution? Kshs. -----

12. What is the interest rate paid on deposits per annum? -----

13. Do you allow farmers to choose the type of account to operate (fixed, current, savings)? 1 - Yes 2 - No. -----

14. What is the fixed charge for customers operating the current account? Kshs. -----

15. When advancing loans which customers do you prefer in terms of account?

1 - None 2 - Fixed account 3 - Current 4 - Savings ----

16. For how long (in months) should farmers operate their accounts before being considered for loans? -----

17. What are the ceiling and floor for loans?

Ceiling (KShs. -----

Floor (Kshs.) -----

18. What is the fixed cost for loans?

(legal fee, stamp duty, charge fee, service fee) -----

19. How long do you take to process loans (days)? -----

20. How many loan applicants did you receive last year (1988)?

21. How many of those applicants were successful? -----

22. Please state the total amount of shillings that all the loan applicants required as well as the total amount that was actually disbursed last year (1988)

Total amount required (Kshs.) -----

Total amount disbursed (Kshs.) -----

23. Please provide data as above (question 22) for the previous five years in the table below:

Year	Amount Applied for (Kshs.)	Amount Disbursed (KShs.)	Portfolio (KShs.)	Total Loans Owed	Total No. of Loan Applicants	No. of Successful Loan Applicants
1984						
1985						
1986						
1987						
1988						

24. What is the reason for the difference between the total volume of loans applied for and the total volume of loans disbursed ?
- 1 - Limited or lack of funds
 - 2 - Incompetent potential borrowers
 - 3 - Others (specify) -----
25. What is the mode of loan repayment?
- 1 - Lumpsum 2 - Installment 3 - both -----
26. How do you recover loans?
- 1 - Farmers come to pay at our office
 - 2 - Funds are obtained from Marketing organizations
 - 3 - Officers collect funds from specified collection points
 - 4 - Others (specify) -----
27. What is the repayment performance? 1- Poor 2-Fair 3-Good _____
28. What do you attribute this repayment performance to?
- 1 - Poor farmer financial management
 - 2 - Lack of supervision
 - 3 - Natural calamities (droughts and pests)
 - 4 - Poor marketing facilities for farm produce
 - 5 - Others (specify) -----
29. What is the commonest collateral offered by defaulters?
- (use collateral codes above) -----
30. What measures do you take against defaulters?
- 1 - None 2 - Auction collateral 3 - others (specify) _____
31. Please specify the proportion (%) of loans that are given in either cash or kind. Cash -----% Kind -----%
32. For loans in kind specify as in the table below:

