

CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

1.1 Economic Policy and Food Security in Malawi

Agriculture remains a very important aspect of Malawi's economy. At the time of independence in 1964, Malawi adopted an agro-based development strategy due to the low potential of the mineral resources and the limited domestic market. It accounts for about 35% of Gross Domestic Product (GDP). The sector is also a major employer of the country's labour force, a major source of export earnings and supply of raw materials to the agro-industries and above all the major source of food. The smallholder sector provides almost 80% of food and involves some 1.6 million families operating under customary land approximately 1.8 million hectares (Government of Malawi, 1994).

In Malawi the achievement and maintenance of food security, import substitution and foreign exchange earnings will continue to depend on increased agricultural production. About 56% of Malawi's farming households are engaged primarily in subsistence production on small holdings of less than 1.0 hectare per household (Government of Malawi, 1994).

1.2 Credit for the Poor and Policy Framework in Malawi

Lack of access to credit is one of the major constraints in improving the welfare of the poor in Malawi. Therefore provision of agricultural credit to resource poor households may facilitate increased production.

The financial market in Malawi has two distinct sub components; formal and informal. Because the poor have little or no collateral and the required amounts and installments are small, the transaction costs are high and formal lenders are discouraged to extend credit to them. As a result, informal credit sources also provide most of the consumption credit to the poorer households (Zeller 1993). Smallholder credit has a direct link to food security, which ties in with a household' s nutrition and health status.

However, certain financial services that formal financial institutions provide, have certain advantages over the informal lenders. These include the institution' s ability to give long term credits, lower interest rates in many informal sources and larger loan sizes. In addition, there is no confidence in the informal markets for deposits, thus informal lenders have not been able to mobilize financial deposits (Desai and Mellor 1993). Again, with deficient interregional and intersectoral financial intermediation, the ability of the informal market to efficiently pool covariate risks of borrowers and lenders is severely limited since both types of participants within the community are exposed to same

(weather and markets) risks, thus creating the need for informal institution intermediation (Zeller 1993).

In the past development of financial markets was based on the assumption that low income groups, mainly found in rural areas, are too poor to be able to save and lack the necessary collateral for obtaining credit. As a consequence, the poor were almost entirely ignored in the design of policies pertaining to financial markets (Von Braun et. al, 1993). Recent experience shows that low income groups often have substantial savings potential (Seibel 1985).

The utilization of credit plays a major role in combating food insecurity. Credit is a working capital, which, when rightly formulated not only smooth out food insecurity but also increases productivity when used for agricultural inputs, through linkages between consumption and production. Even though much focus and study on rural credit has been production related, a greater proportion of loans taken in rural communities have been for consumption purposes (Roth 1993), especially during the pre harvest period and bad production seasons. The seasonal food security stress that rural agrarian households experience leads to a credit seasonality trend, whereas although farmers, prefer to hold physical production assets as savings, they also must rely on external credit at various times, to borrow during the pre-harvest period and pay at post harvest (Deaton 1991).

Credit not only has positive impact on production, but is also known to tie in with a farmer' s willingness to take risks (Kotwal 1985). When credit is available, the fewer are the resources put aside for consumption smoothing and the larger is the proportion put in for productive and more innovative investments. Eswaran and Kotwal (1989) argue that the difference in risk behavior of households is based on differences in access to consumption credit.

It has also been found that poorer households get excluded from the formal credit (Basu 1989; Biswanger and Sillers 1983; Malik 1989; Rao 1970) due to lack of collateral, long and complicated processing, and physical inaccessibility. On the other hand, informal markets, which consists of credit from merchants, relatives and friends, are more easily attainable particularly to the poorer households.

The area' s characteristics, including productive capacity and risk, affecting household' s food security are captured by area specific indicators. The more food insecure regions would be expected to have higher rates of credit participation, especially during the hungry (pre-harvest) season, to smooth out consumption. As a result of these some credit institutions have actually used these area characteristic as a criterion in deciding their area of operation.

Nankumba (1989) reported that strict conditions for acquiring fertilizers on credit, removal of fertilizer subsidies and the establishment of estate farms were factors

impinging on the smallholder attempt to improve their incomes. Zeller found that the number of formal loans obtained by men or women in Madagascar increase significantly with increase in household income. He concluded from his econometric analysis that easing liquidity constraint through credit also increases returns on human capital a production factor which he judges as the most important in the majority of poor smallholder households.

However., Nurah (1993) in Ghana observed that the development effects of agricultural credit tend to be exaggerated and that even where credit increases productivity, it does not necessarily increase family incomes. In Nigeria, Mbata (1991) noted that those who had access to the formal sources consumed more inputs, obtained higher yields and thus realized greater gross margins per hectare than their counterparts who obtained credit from informal sources. However, as in many credit impact studies, Mbata did not control his analysis for other factors which can influence the results. For example, those who borrow formal credit, may have more land, are better educated, live closer to markets than those households which only borrow from informal sources.

Modak (1992) reported that greater family size, greater per capita consumption expenditure, greater size of operated holding, larger amount of credit taken from other sources and lower savings rate were associated with higher default. However, higher crop income, cropping intensity per capita total incomes and total expenditure contributed to non default. In addition Zeller observed that loan default is caused by negative household

shocks such as drought, illness or death of family members. In contrast, Zeller shows that poorer households have higher repayment rates, due to the fact that the poor place a higher value on access to credit and therefore attempt to avoid more to default on loans. Thus, these studies show a mixed picture about the relationship between loan default, farm income and poverty.

Interventions in rural financial markets in less developing countries have become a world wide development issue. There are many justifications for government/donor interventions in rural finance. It is argued that in most developing countries the competitive market fails to bring about efficient allocation of credit, and hence government interventions may be justified (Besley,1994).

Credit market failure in these countries is attributed to the following reasons; imperfect information, high transaction costs of dealing with a small and large number of borrowers, and lower returns from investments in rural finance institutions as a result of low incomes.

Governments intervene in credit and financial markets for various reasons in the developing countries. The most important broad based objective of most development organizations in most interventions in rural finance institutions is poverty alleviation with specific emphasis on employment and income generation among the poor (Berger, 1989). The target population for such interventions in credit markets has been the resource poor

and more particularly women who in most societies do not have the right to property and productive assets.

Oxfam (1987) observed that in the formal institutions, credit uptake by the poor has been low or non-existence. There are several reasons which contribute to poor access to formal credit for small borrowers. First, it is very difficult to access credit in formal finance institutions because of the conventional collateral requirements against credit. The poor usually lack productive resources and have no property rights and are therefore not able to provide the collateral in order to gain access to credit to finance their small business ventures. Second, the cost of borrowing is very high and unbearable in formal credit markets.

There are still some gray areas on the issue of intervention, the debate is whether accessibility or the cost of credit is the issue in rural credit markets. Yaron (1994) contend that, although the poor clientele need low and subsidized interest rates, it is access to credit and not its price that has been the most important factor in rural credit markets. Chipeta and Mkandawire (1991) observed that interest rates in the informal financial system are higher than those ruling the formal financial sector. The lending interest rates charged by money lenders ranged from 300 to 1,200 percent per annum. Third, in other cases, it has been argued that there has been biases against women in formal credit markets.

Rural financial institutions have attempted to avert the problems contributing to low credit uptake by introducing simpler delivery mechanisms and simple forms of collateral (no collateral) and by offering credit at subsidized interest rates. In most poverty focused credit programs, there has been no collateral requirements by the borrowers and these schemes have relied heavily on the concept of group formation and joint liability and character reference. The problem of price has been considered by offering credit at subsidized interest rates mostly below market rates, although in exceptional cases the interest rates have matched those of the informal markets. In most cases the real interest rates have been negative.

Interventions in rural finance markets in Malawi have had no policy basis prior to 1995. The two earlier Statements of Development Policies 1975-1986 and 1987-1996 did not have strategies on how the poor will be assisted and poverty alleviation was not a central focus for development plans. In any case, there has been no general framework for interventions in the rural financial markets. Interventionist policies were therefore ad hoc and targeted to limited areas.

The issue of was very politically sensitive and it was assumed that only a small segment of the population is poor despite the country' s poor rankings at world level in terms of GNP per capita and human development index.

According to Msukwa (1994)

"Until recently the term "poverty" was not openly discussed as it related to Malawi. The term has mostly been used to describe a situation that existed during the pre independence period which was no longer the case in modern Malawi."

The Government of Malawi/UNICEF (1993) report and many other studies have provided a basis for the development of a policy framework for poverty alleviation. In 1995 the Malawi Government published the Policy Framework for Poverty Alleviation Program (PAP). Some of the strategies in poverty alleviation centered on the provision of credit facilities to the poor. According to the Malawi Government (1995) the strategy for PAP include:

- promoting increased participation of poor women and youth in economic, social and political affairs by the provision of basic services that enable them to take advantage of opportunities
- economic empowerment of the poor by promoting the more productive use of their abundant resource namely, labor, which is underemployed
- improving the poor' s access to credit facilities by deepening and broadening the financial sector to assist the poor to diversify their sources of income

The strategy on the provision of credit facilities in PAP emphasizes the promotion of micro and small enterprises and informal sector whose activities are seldom licensed or registered, unregulated and undertaken on self-employment basis.

Most of the constraints identified bear direct or indirect relationship to accessibility of the poor smallholders to credit facilities. In any case, there is no policy framework in Malawi for the provision of credit facilities to the poor. Institutions that endeavored to mount credit schemes have done so without any policy guidelines and hence there have been great variations in the design of credit schemes for the poor, some of which are not economically sustainable.

1.3 Rationale of the study

In the past few years Malawi has seen the emergence of various credit schemes targeted at the rural population in addition to the already existing programs. The schemes focus on credit needs instead of credit demand resulting in supply led subsidized, supervised and narrowly defined production credit.

Previous studies in Malawi, Nankumba, 1980; Reeser, Biden, Hoben and Hobgood, 1989; focused on the supply side of the credit markets. Reeser et. al. ,1989; and Msukwa et. al., 1994 focused on the organizational, management and operational structures of the

available credit programs. In all these studies, the issue of determinants and characteristics of household demand for credit was not addressed.

The study of the determinants of credit market participation is, therefore, important due to its implications on food security and its linkages to consumption and production. It has been shown by Esawaran and Kotwal (1989) and Feder (1990) that credit is indeed productive and economical, positively impacting on production behaviour of smallholder farmers. Thus, there is need for an empirical study to analyse the factors that determine a household's participation in the credit market.

1.4 Objectives of the Study

The underlying objective is to analyse the factors that affect household demand for credit. The aim is to provide a better understanding of the households' personal characteristics not only because they influence the household's demand for credit but also due to the fact that potential lenders are likely to base their assessment of borrowers creditworthiness on such characteristics.

1.4.1 Specific Objectives

- i) to develop a micro level econometric model (s) to explain the factors affecting household participation in the credit market

- ii) to identify the underlying determinants of the occurrence of participation and its extent

1.5 Hypotheses

The study will attempt to answer the following hypotheses from which policy implications will be drawn.

- i) Credit from formal lenders is used for production purposes
- ii) Demand for credit has a seasonal pattern
- iii) Informal lender provide the bulk of consumption credit

CHAPTER 2

METHODOLOGY AND ANALYTICAL TECHNIQUES

2.1 Methodology and Data

The study will use data collected by the Department of Rural Development (DRD) of Bunda College of Agriculture in collaboration with the International Food Policy Research Institute (IFPRI) during the 1994/95 agricultural season. The sample size was 404 smallholder households that were purposefully selected. In order to have meaningful statistical analysis, a sufficient number of households participating in the credit programs operating in various parts of the country were required. However credit program participation was a rare reality found in few selected villages (Diagne, Zeller and Mataya 1995). Given this, a feasible alternative to include enough formal credit participants was to stratify along the program membership status variable with random sampling within the strata. The explanation also applies to the selection of the districts where the survey took place. The sites were chosen from those areas in which the four main credit institutions which serve rural households in the country were operating. The districts selected were Mangochi, Nkhotakota, Dowa, Dedza-Linthipe and Rumphi. In these areas,

financial institutions of interest, i.e., Malawi Mudzi Fund (MMF), Malawi Union of Savings and Credit Cooperatives (MUSCO), Malawi Rural Finance Company (MRFC) and Promotion of Micro-enterprise for Rural Women (PMERW), are operating.

2.2 Analytical Framework

The analysis uses several dichotomous (dummy) variables which have been modeled using an analysis of covariance model. These are regression models that contain a mixture of quantitative and qualitative variables. The probit model has been used to model dichotomous dependent variable such as participation in the credit market.

The basic idea underlying a probit model is the normal cumulative distribution function. The normal probability function is the best known of all theoretical probability distributions. In the multivariate probit analysis, although Ordinary Least Squares (OLS) method can be used to estimate the parameters for binary choice models (with response, yes or no), it is likely that certain classical assumptions of regression models will be violated, error terms will not be homoskedastic and thus inefficient parameter estimates will be obtained resulting in t-ratios that are inappropriate.

Alternatively probability models are used, however, one can not use the Linear Probability Method because predicated values may fall outside the (0,1) interval thereby going against the basic tenets of probability. In order to overcome this most researchers

use the logit and probit models (Pindyck and Rubinfeld, 1991). These models use the Maximum Likelihood Estimate procedure and have a number of desirable statistical properties; all parameter estimates are consistent, efficient and asymptotically normal so that the analogy of the t-test in regression is applicable. The t-ratio (estimated coefficient/estimated standard error) follows the normal distribution and the chi-square test replaces the F-test when testing the significance of the model parameters.

The probit model has therefore been adopted for this study because it is easier to compute and interpret and also that it is very convenient particularly in estimating the equation for the probability of participating in the credit market. The estimation of the subsequent equation was done by OLS.

The explanatory power of the regressors shall be tested using R-Squared adjusted values.

2.3 Model Specification

To capture the seasonality aspect of borrowing, we will use the probit model. The dependent variable being the household credit participation with the values of 0 or 1 (0 for non participation and 1 for participation). The seasonality trend of borrowing will be captured by identifying the agriculture cycle, and in the process, desegregating the hungry from the non hungry period season.

The second step will involve the estimation of the extent of participation among the borrowers, we will use the OLS model. The same variables more or less affect both the decision to participate as well as the extent of participation, but here we take the framework one step further by delineating the uses of credit.

Effects of participation in financial services on nutrition, health, income and wealth of household may depend on which household member has participated. If, for instance, targeting women increases welfare to all households at a higher level, then targeting may be justified (i.e., intra-household allocation). To explore this issue we will study credit participation in various markets, as well as the utilization of the credit by focusing especially on gender and particularly women-headed households. The above steps will be used to answer the questions posed in the study objectives.

2.4 Specification of Credit Participation Function

2.4.1 Probit Regression Analysis

The probit model to be used to estimate participation includes the following independent variables:

Participation was presented by the equation below:

$$Y = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 \quad (1)$$

Where

Y = The probability of participating in the credit market

(1=yes, 0=no).

X₁ = Formal Education of Household head (1=yes, 0=no).

X₂ = per capita land owned in hectares.

X₃ = number of animals owned by household.

X₄ = size of household.

Regional and seasonal (planting/pre-harvest, and post-harvest) dummies are also in addition to the above.

2.4.2 Estimation of the Extent of Credit Demand

The study will also estimate the significance of the various variables in determining the extent of borrowing on all valid credit transactions. Variables to be utilized in the analysis are as follows;

$$Y = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7$$

(2)

Where

- Y = Total loan value received (MK)
- X₁ = primary occupation of borrower (1=farming, 0=otherwise)
- X₂ = size of household.
- X₃ = farmer took input credit (1=yes, 0=no).
- X₄ = household took credit for food consumption (1=yes, 0=no).
- X₅ = per capita income earned by household
- X₆ = farm expenditure
- X₇ = sex of household head (1=male, 0=female)

In addition, regional and seasonal (planting/pre-harvest, harvest, and post-harvest, harvest, and post-harvest).

2.5 Survey Design

The villages surveyed had been randomly selected in each district from all the villages that had access to at least one of the above four mentioned programs. About half the households randomly selected were those presently receiving credit. Thus, the survey

sampled PMERW (90 participants), MRFC (60 participants), MUSCO (30 participants) and Malawi Mudzi Fund (30 participants). The other half were households not presently receiving credit from any institutions although about half had previous access to Smallholder Agricultural Credit Administration (SACA) loans (Diagne et al 1995). In order to control for community driven effects, the control groups, i.e. non participants were randomly selected from the same village as participants.

2.6 Selection of Sample Households

The information about the villages in which the four credit programs were operating, was sought at the national headquarters and district offices of the credit institutions. This was followed by a village reconnaissance survey before a sample frame of villages hosting the present members from each credit program selected for the study and from which the village and household sample was drawn subsequently. The second step was to brief the district administrative and village leaders about the purpose of the study. The selection of the area was based on location of the clubs. After informing the community about the purpose of the survey the next step was to carry out a village census. This consisted of taking a list of all households with information on whether a household was a present member or a past member of a credit program. The procedure was the same except for Linthipe in Dedza where a multi-stage sampling was used. That is, MRFC office in Linthipe was randomly selected from the list of field offices at the headquarters followed

by selection of four clubs from the list of the MRFC clubs in Linthipe EPA. Thereafter the procedure was the same as for the other areas. (Diagne et. al. 1995).

CHAPTER 3

EMPRICAL RESULTS AND DISCUSSION

This chapter analyses the survey' s credit market sources as well as the borrowers credit uses and the cost of borrowing. This study will feed into the discussion of the determinants and extend of credit market participation in Chapters 4 and 5.

3.1 Characteristics of the Households

This section describes the household with respect to their characteristics and relates those characteristics to participation in the formal and informal credit markets.

Table 1 below highlights participation in the credit market by household head.

Table 1: LOAN CATEGORY BY SEX OF HOUSEHOLD HEAD

	ALL	INFORMAL	FORMAL		
	n	n	%	n	%
Male	225	65	28.9	160	71.1
Female	77	28	36.4	49	63.6
Total	302	93	30.8	209	69.2

Chi-Square=1.5 Not significant at p<0.05

Most of the participants were male-headed households. The majority of the households participated in the formal markets (69.2%). The table also shows that even within both categories of household headship it is in the formal markets where there is much participation (71.1% for male headed and 63.6% for female headed households).

Table 2 describes the participants in the credit market by marital status.

Table 2: MARITAL STATUS OF THE HOUSEHOLD HEADS

	n	%
Unmarried	21	6.9
Married	222	73.5
Widow	33	10.9
Divorced	18	6.0

Separated	8	2.7
Total	302	100

As indicated in Table 2, the proportion of female headed households in the sample (i.e. where household head are either unmarried, widowed, divorced or separated) is small as it is shown that about 74% of the households were married.

Table 3 describes the participants in the credit market, both formal and informal and their marital status.

Table 3: LOAN CATEGORY BY MARITAL STATUS

	ALL	INFORMAL		FORMAL	
	n	n	%	n	%
Unmarried	21	6	6.5	15	7.0
Married	222	65	69.9	157	73.5
Widow	33	14	15.1	19	10.9
Divorced	18	6	6.5	12	6.0
Separated	8	2	2.2	6	2.6
Total	302	93	100	209	100

Chi-square=2.56

Not significant at $p < 0.05$

The majority of the farmers as shown in Table 3 (who were in married category in this case) had the higher participation in both the formal loan market (73.5%) and the informal loan market (69.9%). The table also shows that all the marital status categories were participating in both the informal and formal loan markets. These results are contrary to what has been found in many studies that most households resort to informal sources of credit, this could be because the whole credit market in Malawi is underdeveloped.

Table 4 presents the age category of households participating in the credit market. Age is important in the credit participation because most credit institutions lend to the economically active group. This is normally due to the fact that most people get credit for productive purposes.

Table 4: AGE CATEGORY OF HOUSEHOLD HEADS

	ALL		INFORMAL		FORMAL	
	n		n	%	n	%
20-40 years	114		36	31.6	78	68.4
41-60 years	149		46	30.9	103	69.1
60 years and Older	39		11	28.8	28	71.8

Total	302	93	209
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The study results show the majority of the households were in the age of 20 to 60 years implying that these age groups were actively involved in economic activities, *ceteris paribus*. This is also supported by the overall average age, which is at about 46 years. Statistics in Table 4 indicates that a large proportion of household heads in the 20-40 years age group (68.4%) , in the 41-60 years age group (69.1%) and in the 60 years and older (71.8%) were participating in the formal loan market.

Level of education of the household was compared to reflect borrowers understanding of the credit requirements. Table 5 below shows the results.

Table 5: EDUCATION OF HOUSEHOLD HEAD AND LOAN CATEGORY

	ALL	INFORMAL		FORMAL	
	n	n	%	n	%
No Education	67	16	17.2	51	24.4
STD 1-5	146	39	41.9	107	51.2
STD 6-8	68	30	32.3	38	18.2
JC	13	5	5.4	8	3.8
MSCE and above	8	3	3.2	5	2.4
Total	302	93	100	209	100

The majority of the respondents had attended formal school up to Standard 5 (Junior Primary level) and as such were able to read and write, 41.9 % for the informal market and 51.2 % in the formal credit market. The table shows that for both the informal and formal credit market, participation of those that had attained junior secondary education was very low (5.4% and 3.8% respectively). There was only a small proportion of participants in both credit markets that had attained the Malawi School Certificate of Education (3.2% in the informal market and 2.4% in the formal market. This could be explained by the fact that the more educated one is the more likely that one gets a salaried employment as such it less likely that one would resort to participating in the credit market.

Land is one the human capital indicators and in most cases it is the principal asset of rural households, the analysis of demand for credit can not be done independently from the possession and size of land. Table 6 describes landholding sizes of the households that participated in both the formal and informal credit markets.

Table 6: LANDHOLDING SIZE AND LOAN CATEGORY

	ALL	INFORMAL		FORMAL	
	n	n	%	n	%
Less than 0.5 ha	11	4	4.3	7	3.4
0.5-1.0 ha	41	14	15.1	27	13.0

1-1.5 ha	81	23	24.7	58	27.9
1.5-2.0 ha	46	16	17.2	30	14.4
2-3 ha	72	25	26.9	47	22.6
Over 3 ha	50	11	11.8	39	18.7
			100		100

The majority of the households had landholding sizes as reflected by the average as well as the proportion of households with atleast 1.5 ha (Table 6). The results show that in the formal market a higher percentage (27.9%) had holdings in the 1-1.5ha category while for those in the informal market it was the 2-3ha category that had many participants (26.9%)

3.2 Credit Characteristics

During the survey period, it was found that 75% of the households had borrowed from credit markets with a total of 302 credit transactions taking place (Credit market participation is subsequently examined in Chapter 6). The sections below will examine the sources and uses of the credit

3.2.1 Sources of Credit

Credit can be obtained from a number of sources, which are generally classified as either formal or informal. Rather than falling clearly into two distinct categories the sources of credit can actually be thought of as existing on a continuum.

This section looks at the major sources of household credit in the study. The borrowers obtained loans from different submarkets (Table 7).

Table 7: SOURCES OF CREDIT

Sources of Loan	Number	Mean Volume (MK)	%	Total Volume (MK)	% From Total Disbursement
Formal Sources					
MRFC/SACA	108	785.81	35.80	84,867.48	38.18
Malawi Mudzi Fund	25	753.28	8.30	18,832.00	8.47
MUSCO	13	521.50	4.30	6,779.50	3.05
PMERW1	42	626.24	13.90	26,302.08	11.83
PMERW2	20	1,947.70	6.60	38,954.00	17.53
Other NGOs	1	225.00	0.30	225.00	0.10
Sub Total	209	841.91	69.20	175,960.06	79.16

Informal Sources

First Degree relative	27	402.58	8.90	10,869.66	4.89
Friend	42	657.88	13.90	27,630.96	12.43
Other Relative	18	366.43	6.00	6,595.74	2.97
Neighbor	3	179.28	1.00	537.84	0.24
None of the above	3	227.28	1.00	681.84	0.31
Sub Total	93	498.02	30.80	46,316.04	20.84
All sources	302	736.01	169.20	222,275.02	100.00

More than 79% of the of the loan disbursement in the survey villages came from the formal sources, mainly from MRFC/SACA which account for about 38% of the total loan disbursed. PMERW2 follows next with about 18%. Other NGOs play a very minor role in credit disbursement, probably due to the logistical constraints, funding, and relative importance. The services offered by the four credit programs were selected for they are representative of the type of formal credit option available to rural households in Malawi.

The notable sources of informal credit markets were friends with about 12% of the loans disbursed, followed by first degree relatives with about 5% of the total loans disbursed.

This does not conform with other credit studies in LDC' s where the informal sector provides the bulk of the disbursed credit vis-a-vis the formal market' s credit allotment both in volume and number of credit advanced (Adams, 1989, Deaton, 1991, and Zeller 1993). Results

from these studies indicate that high informal market participation is due to the following factors; ease of entry/exit, operation being outside government/central bank' s control, high flexibility, physical proximity, and first-hand knowledge of the lenders and borrowers cutting down on transaction (including information gathering) costs.

Where credit transaction has taken place, the mean amount of loan is MK736.00. As can be seen in the table, the bulk of the total loan disbursement comes from the formal sources (where MRFC dominate), followed by PMERW2 and friends. The formal credit institutions advance a larger loan amount on average (MK842.00) than the informal credit institutions (MK498.00). This conforms with other studies where it is found that the formal lenders prefer to lend higher amounts of money to cut down transaction costs.

Table 8 examines the types of loans disbursed by the different sources of credit in the survey.

Table 8: LOAN TYPE BY SOURCE

	Cash		In kind		Both	
	n	%	n	%	n	%
Informal market						
First degree relative	18	66.7	1	3.7	8	29.6
Friend	25	59.5	3	7.1	14	33.3
Other relative	6	33.3	2	11.1	10	55.6
Neighbor	2	66.7	0	0	1	33.3
Other	1	33.3	1	33.3	1	33.3

Sub Total	52	17.2	7	2.3	34	11.3
Formal Market						
MRFC/SACA	4	3.7	85	78.7	19	17.6
Mudzi Fund	25	100	0	0	0	0
MUSCO	2	15.4	11	84.6	0	0
PMERW1	41	97.6	0	0	1	2.4
PMERW2	20	100	0	0	0	0
Other	0	0	1	100	0	0
Sub Total	92	30.5	97	32.1	20	6.6
Grand Total	144	47.7	104	34.4	54	17.9

Table 8 indicates that the majority of the loans disbursed were in cash (48% of the total disbursed), except for MRFC/SACA and MUSCO lendings with about 79% and 85% of the lendings given in kind respectively (primarily for inputs).

Most economic development interventions in developing countries are biased against women and female headed households. Table 9 analyses the borrowing categories of the sample participation to find out whether credit market participation follows the same trend.

Table 9: SEX OF HOUSEHOLD HEAD BY BORROWING CATEGORY

Borrowing Category	Male headed	Female headed
	%	%
Non Borrowers	23.5	30.0

Informal Borrowers	22.1	25.5
Formal Borrowers	54.4	44.5
Total	100	100

From Table 9, it is observed that 44.5% of the female-headed households borrowed at least once from the formal institutions as compared to their male counterparts at 54.4%. Thus in terms of sources, both female and male borrowing households had access to loans from formal institutions and accordingly, participation in formal loans is not gender biased. This may have been due to the ' deliberate' policies of most formal institutions, where there is concerted effort not to discriminate against women.

Table 10 describes the sources of credit by districts where the study was conducted.

Table 10: SOURCE OF CREDIT BY DISTRICT

	Dowa		Mangochi		Nkhotakota		Rumphi		Dedza		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Informal Market												
First relative	1	3.7	10	37.0	6	22.2	5	18.5	5	18.5	27	100
Friend	9	21.4	19	45.2	5	11.9	4	9.5	5	11.9	42	100
Other relative	5	27.8	7	38.9	2	11.1	1	5.6	3	16.7	18	100
Neighbor	0	0	0	3	100	0	0	0	0	0	3	100
Other	0	0	1	33.3	0	0	2	66.7	0	0	3	100

Sub Total	15		40		13		12		13		93	
Formal Market												
MRFC/SACA	9	8.3	7	6.5	15	13.9	18	16.7	59	54.6	108	100
Mudzi Fund	0	0	24	96.0	0	0	1	4.0	0	0	25	100
MUSCO	12	92.3	0	0	1	7.7	0	0	0	0	13	100
PMERW1	0	0	10	23.8	14	33.3	18	42.9	0	0	24	100
PMERW2	0	0	4	20.0	8	40.0	8	40.0	0	0	20	100
Other	0	0	0	0	1	100	0	0	0	0	1	100
Sub Total	21		45		39		45		59		209	
Grand Total	36	11.9	85	28.1	52	17.2	57	18.9	72	23.8	302	100

In terms of transactions by district Mangochi had the largest number of loan transactions (28.1%), followed by Dedza district (23.8%) . The formal loans were mostly disbursed in Dedza (19.5%), followed by Mangochi and Rumphi (each with 14.9% of the total loans disbursed). It is, however, important to note that some formal institutions had been targeting specific areas to distribute loans. This was because of the specific objectives of those particular institutions and also their own analysis of where credit was needed most. In the informal credit market, the largest number of loan transactions were in Mangochi District (13.2%), this could be because Mangochi is a lakeshore district where fishing and fish mongering is the major business, as such there is a lot of business activity going on other than farming.

3.2.2 Uses of Credit

This section examines how households utilize credit in terms of district, gender, sources of credit and borrowing periods (seasonality). Credit is an important component of household strategies. Households may borrow for a variety of purposes, including investing in productive purposes, to accumulate assets or deal with unexpected contingencies and interruptions of income. Borrowing is also intended to meet daily or seasonal needs of households. Due to the fungibility of credit, these data on uses of credit need to be interpreted with caution.

Table 11 analyses the uses of credit by volume.

Table 11: MEAN VOLUME (MK) BY LOAN USE

	Mean Volume (MK)	N	%	Total Volume (MK)
Agriculture inputs	810.98	125	41.1	101,372.34
Inputs for IGAs	811.36	94	31.1	76,267.70
Food Consumption	600.50	48	15.9	28,825.24
Non food consumption	495.31	30	9.9	14,859.35
Other uses	190.36	5	1.7	951.80
Total	736.01	302	100	222,276.43

Borrowers engage in credit financing to meet multiple goals. Credit breakdown by uses, given in Table 11 above signifies that these borrowers do prioritize agricultural inputs before other uses in both Volume MK101,372.34 and number of transactions (41.4%) of the loans disbursed. This is due to agricultural seasonality and also the reliance of rural livelihoods on agriculture.

Table 12: LOAN USE BY SOURCES

	Agric inputs	IGA inputs	Food consumption	Non Food consumption	Other Uses
	%	%	%	%	%
Informal market					
First degree relative	1.3	2.6	3.3	0.3	1.3
Friend	2.0	2.0	5.0	5.0	0
Other relative	1.7	2.0	1.3	1.0	0
Neighbor	0	0.7	0.3	0	0
Other	0.3	0	0.3	0.3	0
Sub Total	5.3	7.3	10.3	6.6	1.3
Formal Market					
MRFC/SACA	31.1	0.7	2.6	1.0	0.3

Mudzi Fund	0.3	6.6	1.3	0	0
MUSCO	4.0	0	0	0.3	0
PMERW1	0	11.3	1.3	1.3	0
PMERW2	0.3	5.3	0.3	0.7	0
Other	0.3	0	0	0	0
Sub Total	36.1	23.8	5.6	3.3	0.3
Grand Total	41.1	31.1	15.9	9.9	1.7

As can be seen in Table 12, the formal sources lend primarily for purchase of inputs (36.1%), while the informal sources essentially lend for purchase of food (10.3%). This is consistent with studies in that have found that the formal concentrates on lending for productive uses, while the informal sector focuses on consumption loans. This trend indicates the differing ability of lenders to assess the repayment capacity of borrowers.

3.3 Seasonality Patterns in Use of Credit

Use of credit has a seasonal pattern, Table 13 presents the analysis of loan use and seasonality of that loan use.

Table 13: SEASONALITY BY LOAN USE

	Planting	Pre harvest	Harvest	Post harvest
	%	%	%	%

Agriculture inputs	62.1	21.8	8.3	66.2
Inputs for IGAs	25.8	33.3	50.0	28.6
Food Consumption	7.6	26.5	16.7	2.6
Non food consumption	3.0	16.4	25.0	1.3
Other uses	1.5	2.0	0	1.3
Total	100	100	100	100

Loans for agricultural input purposes occurred mostly in the planting and post harvest period. About 62% of loans for agricultural inputs were disbursed in the planting period and 66.2% in the post harvest period. Borrowing for food consumption while spread throughout the season was very low in the planting and post harvest periods (only 7.6% in the planting period and 2.6% in the post harvest period), but rose up sharply in the pre harvest season (26.5%) when food consumption shortfall is at its highest. This indicates a clear seasonality pattern, vis-a-vis borrowing that follows the agriculture production cycle.

3.4 District Trends in Loan Uses

Since borrowing follows the agriculture production period. Table 14 analyses the loan use by district in order to determine whether the use of credit follows the major occupation of the various districts.

Table 14: LOAN USE BY DISTRICT

	Dowa	Mangochi	Nkhotakota	Rumphi	Dedza
	%	%	%	%	%
Agric inputs	69.4	10.6	36.5	29.8	76.4
IGA inputs	2.8	50.6	42.4	45.6	2.7
Food consumption	8.3	27.0	11.5	10.5	13.9
Non Food consumption	19.5	10.6	5.8	12.3	5.6
Other Uses	0	1.2	3.8	1.8	1.4
Total	100	100	100	100	100

Uses of loans for individual districts gives an interesting pattern. Two districts, Dowa and Dedza use loans primarily for inputs with 69.4% and 76.4% of the total number of loans respectively. Food consumption credit was high in Mangochi (27.0%) while non food consumption credit was high in Dowa (19.5%). Thus the availability of various sources of credit dictate how households utilize loans, i.e., in general the availability of formal credit sources which concentrate on input use lending, relatively increase credit use for inputs.

Cost of borrowing is one of the important factors determining participation in Credit Market Participation. To explore this issue, Table 15 discusses interest rate as one of the cost of borrowing and its district trends.

Table 15: INTEREST RATE BY DISTRICT

District	Interest free loans	Interest Rate	Total
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	n	%	Mean	n	%	Mean
Dowa	6	16.7	19.62	30	83.3	16.35
Mangochi	22	25.9	44.30	63	74.1	32.83
Nkhotakota	8	15.4	26.02	44	84.6	22.02
Rumphi	10	17.5	22.08	47	82.5	18.21
Dedza	6	8.3	31.60	66	91.7	28.96
Total	52	17.2	30.59	250	82.8	25.96

In terms of district specific loans, all but one had less than 20% of credit free of interests. Only Mangochi had about 26% of the loans being credit free. The highest interest rate was found in Mangochi district (32.83%). This could be explained by the fact that of all the informal loan transactions, Mangochi has the highest (43.01%) as such the exorbitant interest rates charged by these informal lenders contributed to the high interest rate.

CHAPTER 4

DETERMINANTS OF CREDIT MARKET PARTICIPATION

This chapter analyzes the extent of credit market participation in the study, and identifies participation determinants in terms of household, district and seasonal characteristics with a special focus on food security issues. Determinants of participation in the credit market are very important due to the role that credit plays in the household' s economic portfolio. When a household participates in the credit market, it provides additional resources for support of the household' activities in the current time period. At the same time, the credit represents a claim on household resources in future time periods. The additions to resources made

available from credit are fungible in the sense that, once they enter the set of household resources, they become indistinguishable from existing resources. Therefore, the study of the determinants of credit market participation is important if the impact of credit market participation is to be enhanced.

4.1 Household Borrowing Trends

Table 16 describes the number of times that households have borrowed in both the informal and formal credit markets. Those that borrowed at least once were classified as borrowers.

It was found that 75.8% of the households had participated in both the formal and informal credit market. Of these borrowers, the breakdown is as in Table 16 above.

Table 16: HOUSEHOLD BORROWING FREQUENCY

Frequency of Borrowing	# of households	% of Sample	% of Borrowers
Weekly	11	2.7	3.6
Fortnight	1	0.3	0.3
Monthly	8	2.0	2.7
More than monthly	48	12.0	16.0
2 to 3 times a year	49	12.1	16.2
Once a year	91	22.5	30.1
Very rarely	9	2.2	3.0
First time	85	21.0	28.1

Did not borrow	102	25.2	n/a
Total	404		

As can be seen from the table, of those that borrowed 28.1% were borrowing for the first time, 30.1% borrowed about once a year, 16.2% borrowed two to three times a year.

Table 17: FREQUENCY OF BORROWING BY SEASONALITY

Seasonality	One time Borrower		More than one time Borrower	
	n	%	n	%
Planting	50	28.4	16	12.7
Pre harvest	66	37.5	81	64.3
Harvest	5	2.8	7	5.5
Post harvest	55	31.3	22	17.5
Total	176	100.0	126	100.0

Referring to Table 17 above, it is found that of those who borrowed once, 37.5% of the loans were obtained during the pre harvest period when food stocks start to deplete, followed by post harvest when farmers begin to prepare the land for cultivation.

More than half of the loans in the category (64.3%) that borrowed more than once were transacted in the pre harvest (i.e., the hungry period) when food stocks have depleted, followed by the post harvest season with 17.5% of the loans and planting season with 12.7% of the total loans.

For the multitime borrowers the pre harvest period is found to be an even more dominant period.

Table 18:SEASONALITY BY LOAN USE

	Planting		Pre harvest		Harvest		Post Harvest	
	n	%	n	%	n	%	n	%
Agriculture inputs	41	32.8	32	25.6	1	0.8	51	40.8
Inputs for IGAs	17	18.1	49	52.1	6	6.4	22	23.4
Food Consumption	5	10.4	39	81.2	2	4.2	2	4.2
Non-food consumption	2	6.7	24	80.0	3	10.0	1	3.3
Other uses	1	20.0	3	60.0	0	0	1	20.0
Total	66	21.8	147	48.7	12	4.0	77	25.5

In Table 18 above, 81.2% of the loans for food consumption were taken in the preharvest period. This is the time when food shortage is acute, right before harvest is completed, and the agriculture marketing season has yet to start.

It is evident that loans for food consumption dominate in the pre harvest period, thus one can see that credit plays a major role for households in attempting to attain food security, especially during the hungry season.

Table 19 analyses the frequency of borrowing by participating households.

Table 19: FREQUENCY OF BORROWING BY SOURCE

	One time Borrower		More than one time Borrower	
	n	%	n	%
Informal Market				
First degree relative	11	6.2	16	12.7
Friend	20	11.4	22	17.5
Other relative	11	6.2	7	5.6
Neighbor	0	0	3	2.4
Other	3	1.7	0	0
Formal Market				
MRFC/SACA	84	47.7	24	19.0

Mudzi Fund	10	5.7	15	11.9
MUSCO	11	6.2	2	1.6
PMERW1	17	9.7	25	19.8
PMERW2	8	4.5	12	9.5
Other	1	0.7	0	0
Total	176	100	126	100

Almost 48% of the one-time borrowers' and 19.0% of the multitime borrowers lending came from MRFC/SACA in the formal sector. In the informal sector the major lenders for both the one-time borrowers and the more than one-time borrowers were friends (11.4% and 17.5% respectively) and first degree relatives (12.7%) were the second major lenders (Table 19).

Table 20: FREQUENCY OF BORROWING BY LOAN USE

	One time Borrower		More than one time Borrower	
	n	%	n	%
Agriculture inputs	100	56.8	25	19.8
Inputs for IGAs	38	21.6	56	44.5
Food Consumption	19	10.8	29	23.0
Non food consumption	17	9.7	13	10.3
Other uses	2	1.1	3	2.4

Total	176	100	126	100
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As shown in Table 20, credit for agricultural inputs is more than half of the disbursed for one time borrowers (56.8%), followed by credit for inputs into IGAs (21.6%). While for the multitime borrowers the majority of the loans were used for inputs into other Income Generating Activities (44.5%), followed by household food consumption (23.0%).

The above analysis tells us a few things about the borrowers in this study. First, there is a seasonality trend in credit borrowing as well as credit uses which follows the agriculture cycle. Secondly, credit for consumption (especially food consumption) is dominant in the pre harvest period. Finally, the major source of lendings come from formal sources.

4.2 Socio-economic Characteristics of Borrowers and Non Borrowers

This section tries to identify some socio-economic characteristics that differentiate borrowers from non borrowers and also one time borrowers against multitime borrowers (Table 21).

Table 21: SOCIOECONOMIC CHARACTERISTICS OF BORROWERS VERSUS NON BORROWERS

Feature	Non Borrowers Mean	Borrower mean
Family size	4.66	5.75

Age of Household head	44.97	45.47
Formal household head education (0,1)	0.73	0.76
Took Food credit (0,1)	n/a	0.16
Per Capita Loan size (MK)	n/a	147.97
Per Capita Cropped Area (ha)	0.45	0.42
Per Capita Income (MK)	92.86	96.78
Used Fertilizer on Maize (0,1)	0.33	0.60
Kg/ha Fertilizer Used	74.38	127.61
Per Capita Livestock sold (MK)	25.17	21.22
Sold livestock (0,1)	0.23	0.39
Per Capita livestock owned (MK)	241.79	150.84

From Table 21, the non borrowers are shown to have a slightly better livestock value than the borrowers (MK241.79 versus MK150.84). The borrowers have a better per capita income than the non borrowers. The non borrowers have smaller family size, indicating that the larger the family size the more one is apt to borrow. The borrowers have a lower per capita cropped area, but not at a significant level, and also exhibit a higher rate of formal education for the household head.

In terms of input use, a higher percentage of the borrowers used fertilizer (60% versus 33%). The intensity of fertilizer use on maize (Staple for food for the survey areas) shows a distinctive pattern. The non borrowers use a much lower amount of fertilizer than the borrowers (74.38 versus 127.61). This indicates that borrowers focus more on food produce in using fertilizer (where fertilizer use on crops was positive).

Most families in rural areas sale livestock to cushion consumption in times of food shortage. For the study, both non borrowers and borrowers sold livestock. Of non borrowers who sold livestock, the average value of sale per capita was MK25.17, while for the borrowers the per capita livestock value was only MK21.22. Those who participated in the credit market sold livestock at a slightly higher level (39% versus 23%). Thus sale of livestock is utilized as an additional consumption smoothing strategy to credit, and not a substitute.

The above indicators demonstrate that in general, the slightly better off households had not participated in credit market. Since as mentioned above, most of the borrowing from the informal sources was for food consumption and for the formal inputs agricultural inputs, it is not surprising that the poor primarily borrow to combat food shortage. Formal sources to combat long term food shortage (agricultural inputs) and informal sources to combat seasonal food shortage in particular.

4.3 Differences between one time borrowers and multitime borrowers

Delineating those who borrowed once from those who borrowed more than once, by some household characteristics, we see lower income indicators (both per capita income and livestock value), and higher family size for those who borrowed more than once (Table 22).

Table 22: SOCIOECONOMIC CHARACTERISTICS OF ONE-TIME BORROWERS VERSUS MULTITIME BORROWERS

	Non Borrower	One time Borrower	More than one time Borrower
Family size	4.66	5.43	6.20
Age of Household head	44.97	45.53	45.39
Formal household head education (0,1)	0.73	0.70	0.86
Took Food credit (0,1)	n/a	0.10	0.23
Per Capita Loan size (MK)	n/a	149.07	146.44
Per Capita Cropped Area (ha)	0.45	0.41	0.43
Per Capita Income (MK)	92.86	106.98	82.25
Used Fertilizer on Maize (0,1)	0.33	0.61	0.59
Kg/ha Fertilizer Used	74.38	138.56	112.02
Per Capita Livestock sold (MK)	25.17	25.74	14.91
Sold Livestock (0,1)	0.23	0.39	0.39
Per Capita livestock owned (MK)	241.79	221.10	53.25

Measuring per capita loan size for each loan taken, the one time borrowers on average borrowed a higher amount (MK149.07 versus MK146.44) than more than one time borrowers. This is partly due to the credit taken out for input uses (formal sources which provide most of the input credit lend higher amount, thus the mean value may be higher).

Also, over 23% of the multitime borrowers took out credit for food consumption purposes, versus 10% for the one time borrowers. Sale of livestock as an additional income stability strategy is utilized by both groups, but at the same level (39%) though the mean per capita

sale amount is less in the multiple borrowers (MK14.91 versus MK25.74). Consequently, there is a complementarity between credit and sale of livestock to bridge seasonal and chronic consumption deficit.

Thus the poorer households within the borrowing classification are the multiple borrowers, and those households do have access to both formal (since most of the input credit came from the formal sources) and informal credit markets.

4.4 Gender Differences in Participation

There are some distinct differences in participation of male versus female headed households, as well as by gender of actual borrowers (Table 23).

Table 23: BORROWER'S PROFILE IN CREDIT MARKET

	Male	Female	Total	
			n	%
Participation	76.5	70.0		
Relationship with Head				
Household head	56.9%	79.6%	365	62.2

Spouse	40.2%	4.4%	187	31.9
Son/daughter	2.7%	13.1%	30	5.1
Father/mother	0%	0.7%	1	0.2
Brother/sister	0%	1.5%	2	0.3
Daughter in law	0.2%	0%	1	0.2
Male	58.2%	8.0%	273	46.5%
Female	41.8%	92.0%	314	53.5%

The female headed households have 70.0% participation rate in the credit market, against 76.5% for the males. Looking at who actually borrowed in the households, 46.5% of the borrowers were male (53.5% female). This may indicate a deliberate effort by credit institutions (especially formal) to deliberately target women. Most researchers have shown that de jure female headed households are found to be poorer, and coupled with the traditional discrimination that women face, people prefer not to lend to these particular group of households.

In male headed households, about 56.9% of the borrowers were husbands (male), while 40.2% were the wives. In total 46.5% of the borrowers were male. In the female headed households, 79.6% of the borrowers were the female heads, but here son/daughter' s participation in borrowing was 13.1%. Thus the son/daughter (children) play a larger role in

borrowing in the female headed households. In total 92.0% of the borrowers in the female headed households were females.

Table 24 examines whether there were differences in the use of credit between male and female headed households.

Table 24: HOUSEHOLD HEAD BY LOAN USE

	Male		Female	
	n	%	n	%
Agriculture inputs	105	46.7	20	26.0
Inputs for IGAs	58	25.8	36	46.8
Food Consumption	35	15.6	13	16.9
Non food consumption	24	10.7	6	7.8
Other uses	3	1.3	2	2.6
Total	225	100	77	100

Chi-square=15.14 significant at p<0.05

The results indicate that priorities in usage of the loan were significantly different between male headed households and female headed households. The male headed households prioritized agriculture inputs (46.7%) followed by IGA inputs (25.8%). For the female headed households the major use of loan was for inputs into IGAs (46.7%) and followed by agricultural inputs (26.0%). While for both types of household headship food was the third

priority, female headed households had a higher percentage than male headed households (16.9% and 15.5% respectively).

Table 25 describes the coping mechanisms used by the households during the survey period in order to supplement their incomes.

Table 25: HOUSEHOLD HEAD BY LIVESTOCK SALE

	Male		Female	
	n	%	n	%
Sold Livestock				
Yes	131	58.2	54	70.1
No	94	41.8	23	29.9
Per Capita Livestock Sold (MK)	26.31		6.34	

In terms of other coping mechanisms, 41.8% of the male headed households sold some livestock during the survey period as compared to 29.9% of the female headed households. This demonstrates that male-headed households depend more on livestock sale than their female counterparts, which may be due to inaccessibility or constraint in the credit market.

4.5 District Specific Tendencies in Borrowing

District characteristics in addition to household specific characteristics, can also explain differences of credit participation amongst households (Table 26).

Table 26: PARTICIPATION BY DISTRICT

	Participation		Non Borrower		Borrower
	%	n	%	n	%
Dowa	64.3	20	19.6	36	11.9
Mangochi	83.3	17	16.6	85	28.1
Nkhotakota	74.3	18	17.7	52	17.2
Rumphi	76.0	18	17.7	57	18.9
Dedza	71.3	29	28.4	72	23.8
Total	74	102	100	30.82	100

From Table 26, looking at the district specific participation (those who borrowed at least once), Mangochi and Rumphi had the highest participation rates, with 83.3% and 76.0% respectively, while Dowa with 64.3% and Dedza with 71.3% had the lowest (Table 26).

4.6. Probit Regression Analysis

This section attempts to statistically confirm the significance of various observations made in this chapter in determining credit participation, by running a probit regression analysis (Table 27). Credit transactions would depend on households' personal characteristics such as education of household head, family size, number of livestock owned and land holding size. These characteristics are important for two reasons. First, they influence the households' demand for credit. Second, potential lenders are likely to base their assessment of borrowers' credit worthiness on such characteristics.

The dependent variable is participation in the credit market. The dummy dependent variable is 1 if the household has borrowed, 0 otherwise. Area (district) dummies are included to take care of the different agro-ecological and socio-economic conditions. Dummies for seasons (pre planting, planting, harvest, and post harvest) are included to capture the seasonality aspect of borrowing.

A priori sign expectations are that some human capital indicators (education, family size and land holding size) should positively affect the household's probability to participate in the credit market. The number of livestock owned would be expected to reduce the probability of participating in the credit market, since the farmer can sell off some of the livestock to smooth out income shortfalls before obtaining credit.

Table 27: DETERMINANTS OF HOUSEHOLD'S CREDIT MARKET PARTICIPATION

Variable	Coefficient	T-Statistic
Constant	1.2370	18.535***
Education	0.0416	0.073
Land size owned	-0.0033	-0.076
Livestock Number	-4.4209	-0.275
Family size	0.0202	2.724***
Dedza dummy	0.0342	0.727
Rumphi dummy	0.0021	0.043
Khotakota dummy	0.0018	0.036
Dowa dummy	0.0738	1.349
Harvest dummy	0.5841	6.098***
Post harvest dummy	0.6120	13.793***
Pre harvest dummy	0.6050	16.124***

Notes: Dependent is dummy variable: 1 if participated in credit market, 0 if not. n=404

***Shows significance at $p < 0.01$; **shows significance at $p < 0.05$; Adjusted R-squared=0.69

The results from the probit analysis indicate positive and significant coefficients on such variables as family size as well as the coefficients for seasonality dummies for pre-harvest, post harvest, and harvest periods.

Family size is positively and significantly related to the households. Higher family size means more (consumption) stress on the household, which is mostly reflected through an increased probability of borrowing.

Also significant and positive are the seasonal dummies (pre harvest, harvest and post harvest), this suggests that the probability of household borrowing increased in each of these seasons. This may be explained that the probability of household borrowing for food consumption is increased in the preharvest season, for investment increases during the harvest period and for agriculture inputs increases during the post harvest period.

Education was found to be positive but not significant, this could be because educated household heads have better access to information

Landholding size was negative and not significant. This means that there is a negative relationship between land size owned and credit market participation of a household. This could be a result of the fact that while land is not a highly liquid asset, the households can rent it out for cash in times of need and thereby reducing the households probability to participate in the credit market.

The number of livestock owned by the household was found to be negative and not significant. This negative relationship is due to the fact that livestock is a highly liquid asset,

thus households tend not to borrow when their livestock value is substantial, since they can sell off their livestock when they are in need.

The district dummies are not significant in this study. This reflects that the household probability to participate in the credit market was not influenced by these variables.

The constant term has been shown to be significant in the analysis indicating that there might be other additional factors which affect household participation in the credit markets which have not been modeled in this analysis. This is further reflected in the R-square which is showing that the model is explaining only 69% of the variation in the household participation in credit markets. Nevertheless this value shows a sensible as well as high degree of adequacy of the model in analyzing household participation in credit markets.

CHAPTER 5

THE EXTENT OF CREDIT MARKET PARTICIPATION

5.1 Credit Market Participation

There were 302 participating households in both the formal and informal credit markets during the study. This chapter looks at various characteristics like sources and uses of credit, seasonal trends in determining the extent of credit transactions/volume. In addition to understanding the factors that determine a households participation in the credit market, there is also need to understand the factors that affect the credit volume demanded. This will help in designing credit institutions that are responsive to the needs of the borrowers.

5.2 Determinants in the Extent of Household Credit Participation

There are some discerning characteristics in terms of the extent of borrowing in credit participating households. This section identifies these household attributes that influence the volume of credit transactions. Participating households borrowed an average of MK736.01 during the study period, but as Table 28 indicates, there are some household characteristics that influence the volume of household credit participation.

Table 28: MEAN AMOUNT BORROWED BY SOCIO ECONOMIC CHARACTERISTICS (MK)

Characteristics	Mean Amount Borrowed	no. of cases
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All Participants	736.01	302
Food Credit		
Food credit Borrowers	604.37	47
Non Food Credit Borrowers	760.28	255
District		
Dowa	461.48	36
Mangochi	694.91	85
Nkhotakota	1133.17	52
Rumphi	521.99	57
Dedza	804.42	72
Head of Household		
Male	768.19	225
Female	642.00	77
Per Hectare Farm Expenditure		
Less than MK500	668.32	276
Between MK500-1000	1426.33	20
Greater than MK1000	1458.84	5
Modern Inputs		
Used modern inputs	819.47	187
Not used modern inputs	600.31	115
Family Size		
Low (up to 6)	604.76	193
Medium/high (more than 6)	968.41	109
Per Capita Income		
Low (less than MK500)	606.60	228
Medium (up to MK1000)	979.00	31
High (more than MK 1000)	1247.07	43
Borrowing season		
Planting	528.19	66
Prep harvest	847.65	147
Harvest	733.10	12
Post harvest	701.49	77

From Table 28, it is found that Mangochi had a high percentage of credit market participants as compared to the other districts, but it is Nkhotakota which borrowed much more (MK1,133.17) on the average. It is also noted that family size and per capita income affect the mean volume of credit positively. The higher the income and family size, the

more the household borrows. Credit needs, especially vis-avis consumption, increases with family size. Moreover, creditors are more likely to lend to relatively well off households.

Modern input use also affects the extent of credit, whether the household borrowed for input uses or not. Those who took out input credit borrowed the most. Families who in general use modern inputs, purchased from either own pocket or from input credit, borrowed on average 1.4 times as much versus those who did not (Table 28). Thus, there is a positive association between input use and average borrowing amount. The difference is more apparent when households distinctly borrowed for inputs (inputs are relatively expensive).

In addition, the more farmers spend on their land (measured on per hectare basis) the more they are apt to borrow. The cost and input credit actually move in the same direction, in that input credit automatically raises farm cost, and the need (or desire) to expend more on inputs to increase yield, and thus income, leads to a higher input cost.

In terms of seasonality effects, the pre-harvest period is the time that the highest amount of credit (MK847.65) is given out and to a higher number of participants (147), followed by the harvest season. The least amount of credit lent is during the planting season. This result can be explained by the agrarian household income earning cycle. In pre-harvest period most households deplete their income, hence the need to borrow.

5.3 Ordinary Least Square (OLS) Estimation of the Extent of Credit

This section estimates the significance of the various variables discussed above in determining the extent of borrowing on all valid (greater than zero) credit transactions. The dependent variable is the Extent of Credit, which is, the amount of credit received, the independent variables are farm occupation, family size, input credit, food credit, farm expenditure, per capita income and sex of household head.

In addition, district and seasonal independent dummies are included for this regression as well. The OLS regression was run on 302 households. The estimation result is shown in Table 29.

There are some results that stand out, the amount of borrowing per household is positively and significant dependent upon per hectare farm expenditure, family size and per capita income. Of course the higher the expenditure on farm and the larger the family size, the more the need for credit. When households have higher per capita income, they can borrow more because lenders are more willing to commit high amounts of loans to borrowers who have more wealth for security.

**Table 29: DETERMINANTS OF THE EXTENT OF HOUSEHOLD'S CREDIT
MARKET PARTICIPATION**

Variable	Coefficient	T-Statistic
Constant	-896.82	-3.01***
Farm occupation	152.28	1.55
Family size	111.80	6.95***
Input credit	-63.18	-0.57
Food credit	31.42	0.31
Farm expenditure	281.06	2.73***
Per capita income	3.75	26.20***
Sex of household head	-174.56	-2.03
Dowa dummy	9.08	0.07
Nkhotakota dummy	188.27	1.47
Rumphu dummy	-55.05	-0.45
Mangochi dummy	105.50	0.80
Planting dummy	-137.07	-0.67
Pre-harvest dummy	241.07	1.26
Post harvest dummy	186.09	0.92

***shows significance at $p < 0.01$; **shows significance at $p < 0.05$; Adjusted R-squared=0.72 n=302

In contrast, the amount of borrowing per household is negatively and significantly dependent upon the planting season. The planting season is when farmers are embarking

on the actual agricultural work such that they have already secured loans for inputs, this then means that they cannot borrow for either inputs or food consumption.

Though farm occupation and food credit are not significant, they are positively related to the amount of household borrowing.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 The Study

This study has demonstrated that credit plays a major role in the rural survey areas. During the study 75% of the households had borrowed, with over 34% of the credit being utilized for consumption purposes. Having established the importance of credit in the study, we now recap some of the features of the credit market, and determinants of household's demands for credit from our analysis.

6.2 Summary of Findings

In the informal sector the major source of credit came from friends and first degree relatives, consisting of over 17% of the loans, primarily utilized for food consumption and non food consumption purposes. This demonstrates the overwhelming importance of the informal credit sector, especially in smoothing out consumption shortfalls.

The bulk of the informal loan (81.3%) was disbursed during the preharvest period, when seasonal food needs stresses were at their peak.

The formal sources disbursed over 79% of the total loans distributed, most of it during the planting season for input purchases. One special property is that, unlike many LDCs, the

formal institutions in this study had not been gender biased, being more or less equally accessible to both male and female borrowers (44.5% and 54.4% respectively).

In terms of uses for which the loans were given, 15.9% of loan was for food consumption, while 9.9% was allocated for non food consumption purposes. Input credit consisted of 41.4% of the total disbursement, mostly met, as already mentioned, by the formal lenders.

Over 17% of the loans had no nominal interest rates charged, including over half of the first degree relatives' loans.

There are some socio-economic distinctions observed between borrowers and non borrowing households in the study. Though there was not a significant difference observed in income, the poorer households participated more in credit markets, particularly when looking at multiple borrowers (MK92.86 for non borrowers and MK82.25 for multiple borrowers).

Another coping mechanism was, sale and consumption of livestock was utilized by both groups, probably an indication that some households were not able to borrow, or if borrowed, did not manage to acquire enough credit. In terms of input usage/non usage, we find borrowers using more fertilizer on maize than non borrowers. This indicates that borrowers are more concerned about food security.

Determining the probability of a household's participation in a credit market through a probit estimation, we found that family size, harvest season, post harvest season and pre harvest seasons increases the probability of participation.

In terms of extent of borrowing, an OLS estimation yielded the following results. We find per hectare farm expenditure, per capita income, and family size significantly and positively affect the amount of loan a household borrows, while the planting season has the opposite effect.

6.3 Conclusion and Policy Implications

The above results from the study indicate that rural households have high demand for consumption credit, especially during the pre harvest period. In addition, like most of the developing countries, this segment of population remains outside the formal financial system, which concentrates its lending for input uses.

It is well known that financial services for the poor pose some problems in policy and program design. The obvious one is that the poor are chronically income deficit with little or no collateral to offer, thus mobilization of resources will be seriously undermined. Their savings, credit amounts, and installments are also small increasing transaction costs. In addition, credit needs for production and consumption can not be clearly

distinguished in poor households where both are intertwined and inseparable (Zeller, 1993).

As already discussed in the paper, though informal finance markets provide important credit, insurance, and social security services to the poor, their shortcomings include lack of medium and long term loans for production and technological adoption.

There is hence an agreement about the need to build innovative rural finance systems from bottom-up. To attain this, what kind of financial institutions should one promote, and what should the policy direction be? There had been numerous discussions and ideas, as well as experience forwarded by various experts. Based on those, we will present some recommendations for credit program design below in the context of this study.

The study has indicated that despite considerable efforts undertaken to advance formal credit, the informal credit markets still remain an alternative source of loans. This phenomenon can be explained by the fact that informal financial markets serve additional functions which have no been fulfilled by formal credit programs. There is need, therefore, for formal credit providers to identify these additional functions in order to improve the performance of their programs.

It has been found in the study that seasonality is one of the factors determining household participation in the credit market. To be effective, credit supply would have to correspond to seasonal loan demand cycles. The synchronisation of seasonal credit needs and

profitable investment opportunities with credit supply smoothens income between seasons and may help to stabilise and build the households capital stocks, thus contributing to poverty alleviation.

It has been found that the bulk of credit in the formal sector is limited to productive needs. Credit for consumption is mainly from the informal sector. However, there is recognition that consumption and production in the smallholder households are intertwined and inseparable. Consumption loans are often productive as they serve to preserve the household' s productivity. Based on this, it is recommended that credit institutions should diversify their loans. Lending from formal institutions has to address not only production and income generating activities but also consumption and household needs such as health and education.

In conclusion, providing financial services to the rural poor must be an integral component of any development policy. The study has indicated that sustainable financial institution signifies credit not only for agricultural production, but also for consumption smoothing and income diversification. Given the highly fluctuating incomes of rural households and incomplete insurance markets in Malawi, access to credit can potentially contribute to income generation and income stabilization, thereby reducing both transitory and chronic food insecurity, and consequently attaining one of the important goals in development planning.

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