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AN ECONOMIC AND INSTITUTIONAL ANALYSIS OF FORMAL AND INFORMAL CREDIT IN EASTERN UPPER VOLTA: EMPIRICAL EVIDENCE AND POLICY IMPLICATIONS

By

Edouard Kouka Tapsoba

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ABSTRACT

AN ECONOMIC AND INSTITUTIONAL ANALYSIS OF FORMAL AND INFORMAL CREDIT IN EASTERN UPPER VOLTA: EMPIRICAL EVIDENCE AND POLICY IMPLICATIONS

By

Edouard Kouka Tapsoba

The purpose of this study was to analyze the economic and institutional constraints on the performance of the government agricultural credit program and the informal credit system in the Eastern Region of Upper Volta. The purpose of the government (formal) credit program was to encourage farmers to shift from hand hoe cultivation to animal traction (donkeys and oxen) cultivation in order to increase food production and the welfare of small farmers.

The study was undertaken in the Eastern Region of Upper Volta as part of a broader micro economic survey of 480 small farmers which was carried out by a multidisciplinary team over a 12-month period (April 30, 1978-May 1, 1979). Repeated interviews were used to collect input-output data on a weekly and monthly basis from the 480 farmers over 52 weeks. In addition five sets of monthly and one-shot credit questionnaires were administered to the same 480 farm households. Both traditional farmers (TRAD) and farmers receiving loans for animal traction equipment (ANTRAC farmers) were included in the survey.

The 1978-1979 survey revealed that organization and operational deficiencies of the EORD credit program resulted in untimely delivery of credit in kind to ANTRAC farmers. While the nominal interest rate on government loans was 5.5 percent, the real cost of borrowing for short term borrowers was estimated to be 12.31 percent. Only 2.3 percent of farmers perceived the low nominal interest to be an important advantage of the EORD's credit program. The average annual real cost of lending of the EORD was estimated to be 25 percent of the total loan portfolio outstanding over the 1977-1980 period.

The impact of medium term credit as measured by the technical and economic effects of animal traction at the farm level was modest. The survey results revealed that acreage effects were only higher for donkey farmers and the yield effects were insignificant between ANTRAC and TRAD farmers except for minor crops. Animal traction farmers experienced severe cash flow problems because of the slow learning curve associated with using animal traction equipment and high cash expenses associated with animal traction. But the results were affected by a drought suffered by donkey farmers during the year of the survey.

The repayment of loans from the EORD credit program has been poor. The overall collection ratio declined from 42.7 percent in 1976-1977 to 25 percent in 1979-1980. The poor loan repayment was due to late delivery of credit items by the EORD, unwillingness and indifference of some farmers who did not feel obligated to repay ORD's loans, death or sickness of farmers and draft animals and poor yields.

The survey revealed that the major function of the informal credit system was to provide short term (i.e., four months on the average) cash and in-kind loans to farmers to fulfill social obligations, to meet household expenses, including the purchase of food and for trading. It was found that the informal credit system had two types of loans: non-commercial and commercial. While commercial loans involved interest charges, non-commercial loans played a role of mutual assistance among farmers and did not bear interest.

The survey revealed that the average interest rate in the commercial segment of the informal credit system was 21 percent per month but village money lenders also provide some non-commercial loans with no interest or with negative interest rates. The repayment rate for all cash borrowings in the informal system was 72.2 percent. The survey revealed that there was no widespread hoarding of cash and that farmers were saving or investing their excess cash mostly in cattle.

Specific recommendations for lowering the cost of ANTRAC to farmers were: (1) cost sharing among several users, (2) extending the period of repayment from five to seven years for oxen traction and from four to five years for donkey traction with two years and one year grace respectively. In terms of improving repayment of loans, repayment in kind should be considered, and cash crops such as cotton should be promoted. To improve the EORD credit delivery system, there is a need for better coordination of various credit operations, and improvement of procedures and bookkeeping. A more effective training program for farmers should be established including functional literacy to help farmers understand the credit

policy. Finally the EORD should readjust the interest rate upward to 12-13 percent to keep pace with inflation.

To my late father, Landaogo Tapsoba, who taught me to always reach for the stars, and to my beloved mother, Tinkouma.

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LIST OF ACRONYMS

ACF	Agricultural Credit Fund
AFDI	Association Française pour le Développement International (French Association for International Development)
ANTRAC	Animal Traction
AO	Accounting Office (EORD)
AVV	Autorité des Vallées des Voltas (Volta Valley Development Authority)
BAP	Bureau of Agricultural Production (EORD)
BCD	Bureau of Community Development (EORD)
BDPA	Bureau pour le Développement de la Productions Agricole (French Agricultural Development Agency)
BLV	Bureau of Livestock and Veterinary Care (EORD)
CADU	Chilalo Agricultural Development Unit
CCCA	Caisse Centrale de Crédit Agricole (French Agricultural Credit Fund)
CCCE	Caisse Centrale de Coopération Economique (French Central Fund for Economic Cooperation)
CCDR	Comité Permanent de Coordination du Développement Rural (Permanent Coordinating Committee of Rural Development)
CCC-S	Credit and Cooperatives Sub-Section (EORD)
CDP	Caisse de Prévoyance Sociale (Special Rural Credit Fund in colonial period)
CENATRIN	Centre National de Traitement de l'Information (National Computer Center)
CFDI	Compagnie Française des Fibres Textiles (French Cotton Corporation
CNCA	Caisse Nationale de Crédit Agricole (National Agricultural Credit Agency)
CTS	Coopération Technique Suisse (Swiss Technical Cooperation)
EORD	Eastern ORD
FAO	Food and Agricultural Organization
FENU	Fonds d'Equipement des Nations Unies (United Nations Equipment Fund)
FDR	Fonds de Développement Rural (Rural Development Fund: World Bank)
IMTCC	Individual Medium Term Credit Card
ISTCF	Individual Short Term Credit Form
LDCs	Less Developed Countries
MSU	Michigan State University
MT	Medium Term (Credit)

NDB	National Development Bank
ORD	Organisme Régional de Développement (Regional Development Organization)
SAED	Société Africaine d'Etudes et de Développement (Private Research Consulting Firm)
SATEC	Société d'Aide Technique et de Coopération (French Rural Development Agency)
SFCP	Small Farmer Credit Program
ST	Short Term (Credit)
TRAD	Traditional
UNDP	United Nations Development Program
USAID	United States Agency for International Development

N.B.: CFA — Communanté Financière Africaine

The CFA is the currency unit in West and East Francophone Africa (except Guinea, Mali and Mauritania).

At the time of the study the exchange rate was $1 USA = 230 CFA.

mm. = millimeter
ha. = hectare
kg. (or KG.) = kilogram
km. = kilometer

CHAPTER I

INTRODUCTION

1. Background

Upper Volta, with a population of over 5.6 million and an area as large as that of the state of Colorado (274,000 square kilometers), is a land-locked country in West Africa which is among the 25 poorest nations in the world. The economy is based almost entirely on agriculture where 85 to 90 percent of the population live and produce over 80 percent of the Gross Domestic Product.

Historically, Upper Volta has been self-sufficient in staple food production. But the drought of 1968-74 and lagging food production during the 1970's have focused policy attention on the need to increase food production. Sorghum production averaged 714 thousand tons[1] a year over the 1964-67 period but declined 28 percent to 515 thousand tons during the 1969-72 period [FAO, 1977]. The FAO estimates that sorghum production was 738 thousand tons in 1975 but it fell to 650 and 600 thousand tons in 1976 and 1977, respectively. The FAO estimates that millet production was 383 thousand tons in 1975, 350 thousand tons in 1976 and 330 thousand tons in 1977. According to the FAO, per capita food production index (relative to 1969-71 = 100) declined 15 percent in 1977.

[1] All quantities in metric tons.

As a result of declining and unstable food production, food imports have increased both in quantity and in value. For example, the value of food imports rose from 3 billion CFA[1] in 1972 to over 8 billion CFA in 1974 following the drought of 1973. With the return of normal rainfall in 1975 and 1976 food imports fell to around 4 billion and 4.5 billion CFA, respectively [BCEAO, 1977]. Commercial imports of cereal totaled 25 thousand tons in 1972 and increased to 40 thousand tons in 1973, and 94 thousand tons in 1974. Imports fell to 24 thousand tons in 1975 and 28 thousand tons in 1976 [BCEAO, 1977]. Had the international community not provided massive food aid over the 1972-74 period, actual food imports would have been even larger.

Faced with this food crisis, the Voltaic government's prime objective has been to increase food production both to keep pace with rapid population growth as well as to ensure a reliable food surplus. But in order to increase agricultural production in Upper Volta where most of the rural population is still at the subsistence level, a whole range of interlocking constraints must be addressed. These constraints can be overcome through (1) improvement of infrastructure, (2) technological change, (3) institutional innovation and (4) economic incentives.

The majority of farms are small family holdings ranging from 3 to 5 hectares. The main agricultural activities consist of the production of staple food crops (sorghum, millet, corn and rice), cash crops (cotton, peanuts and sesame) and livestock (cattle, goats,

[1]The exchange rate was about 220 CFA/$1 U.S. in 1977.

sheep, chickens, etc.). In addition, apart from the densely populated central Mossi Plateau, agricultural land generally is not a constraint and there is no host of landless laborers. But the shortage of family labor constitutes a serious bottleneck especially during the weeding period [Zalla, 1976].

In order to attain its national goals, the Voltaic government, since 1965, has pursued a regional approach to rural economic and social development. Thus, the country has been divided into eleven Organismes Régionaux de Développement (ORDs). The Eastern ORD (EORD), which is the focus of the analysis in this study, was among the last to be officially established in 1974. The ORDs have been entrusted with a wide range of responsibilities, including agriculture extension, veterinary care, community development activities (functional literacy, women's projects, etc.), irrigation projects, infrastructure (feeder roads), marketing, and the provision of inputs and small agricultural implements such as animal drawn plows, carts and other accessories.

To achieve production goals, most ORDs have developed agricultural credit programs which provide both short term credit for seasonal inputs (fertilizers, pesticides, insecticides, improved seeds, etc.) and medium term credit for animal traction equipment. Both short and medium term credit are highly subsidized.

There has been considerable experience with rural credit programs in the last fifty years in Upper Volta. But credit programs during the colonial period were generally unsuccessful.[1]

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[1] See Chapter IV for a historical overview of agricultural credit in Upper Volta.

After independence in 1960 and with the establishment of the ORDs, credit has been promoted by the government as a means to accelerate agricultural production. The various credit programs carried out by the ORDs have produced mixed results depending on the economic environment, and the type of crop(s) grown. Although credit programs have been successful in some predominantly cash crop areas (such as in Western Upper Volta with cotton schemes financed by the World Bank) the results for food crop production have generally been less successful. Cash crop prices have been relatively more attractive (even guaranteed for cotton) than food crops, and farmers were assured of selling their products in a well organized marketing system.

From the mid 1960's to the mid 1970's, the different ORDs had their own credit programs which they operated independently from one another. But since 1975 the Ministry of Rural Development has set general guidelines and uniform terms of credit for the ORDs to follow: 5.5 percent interest and, for medium term credit, a four or five year term with one year of grace.[1] Today, the government is in the process of establishing a specialized national lending institution, the Caisse Nationale de Crédit Agricole (CNCA) devoted to agricultural credit.

Over the years, agricultural planners have encouraged the adoption of animal powered mechanization as a means of increasing agricultural productivity. This strategy has been based on a number of premises. First, in breaking an observed labor bottleneck, this

[1] A four year term for donkey traction and a five year term for oxen traction.

time saving technology would permit an expansion in acreage [Jones, 1970; Peacock et al., 1966; Garin, 1966]. Second, in allowing better and more timely preparation of seed beds and weeding operations, it would have significant impact on yields [Vidal et al., 1962; Dennison, 1961; Charreau et al., 1971; Kline et al., 1969; Ramond et al., 1973]. The combined effects of both acreage expansion and yield increases were assumed to increase production. In addition, the use of seasonal inputs, especially fertilizers and the overall integration of animal and crop production, have been seen as additional factors which would contribute to increasing agricultural production.

The rate of adoption of animal traction and the use of improved seasonal inputs, however, have been rather modest. Given that the potential effects, both in technical and economic terms, are promising, the assumed explanation is that low adoption rates are due to capital shortage at the farm level. A complete donkey traction package, for example, requires an initial investment of 60,000 CFA, whereas a complete oxen package requires as much as 120,000 CFA or more [ORD de l'Est, 1979]. Hence, agricultural credit has been introduced to alleviate this assumed financial constraint.

Numerous credit specialists point out that although credit can be a very powerful tool for agricultural development, it should not be considered in isolation but rather viewed in relationship to other institutions and to the overall policy environment [Jones, 1971; Oweis, 1973]. Moreover, a credit program may collapse as beautifully as it was designed if the local socio-cultural and

economic environment is not taken into account. Social scientists contend that socio-cultural institutions should be understood prior to the launching of credit programs [Jones, 1971; Gillette et al., 1973; Donald, 1976] because a Gourmanche farmer is not the same as a Bobo farmer, nor is a Mossi farmer exactly the same as a Lobi farmer.[1] Farmers from different ethnic groups have different customs and they are guided by different social structures and economic opportunities. These differences must be taken into account and credit programs should be tailored to fit the local environment.

The numerous failures of small farmer credit programs in the developing world are hard to explain in the midst of widespread use of subsidized interest rates for production credit. As mentioned earlier, the cause of this "high mortality rate" among small farmer credit programs may stem from the fact that these programs have been conceived, designed and implemented based on a dubious theoretical foundation. For example, as one reviews credit programs in the Third World one notes that most development specialists design credit programs based on economic theories and models which rely heavily on the direct transfer of the so-called "modern" institutions to a subsistence or near subsistence setting. This practice has recently come under heavy fire by many economists. For example, Adams [1978, p. 547-560] observes that:

> Economists are . . . handicapped in the analysis of rural savings behavior by the incomplete, and to some extent inappropriate theoretical tools at their disposal. There are serious shortcomings in consumption theory when it is applied to rural

[1] Gourmanche, Bobo, Mossi and Lobi are all ethnic groups in Upper Volta. The Gourmanche constitute the predominant ethnic group in the Eastern ORD.

> behavior in LDC's. . . . Most consumer analyses to date, for example, have assumed that consumption and investment decisions were made by separate decision-making units . . . however, rural consumption behavior can only be explained by analyzing the firm-household as it simultaneously makes consumption, investment and savings decisions.

2. Problem Setting and Need for Research

There has been little research on the use of agricultural credit at the farm level in Upper Volta except for ad hoc reports prepared to support requests for foreign assistance. In some ORDs, such as the Eastern ORD, large credit programs were instated in the mid-1970's in the absence of research results pinpointing the lack of credit as a major constraint on agricultural and rural development.

But the Eastern ORD is not unique in launching a major credit program without a firm knowledge base. Underlining the lack of such research, Lele [1975, p. 85] says:

> Few baseline surveys have been conducted in designing rural development programs prior to the establishment of a credit service. Consequently, little hard information is available to program planners on the target population's saving propensities or the sources from which it obtains credit.

Due to the urgency to launch crash food production programs following the 1968-74 drought, coupled with the fact that research is often regarded as a luxury in Upper Volta, and in many other Third World countries, it is understandable why research on credit followed rather than preceded the launching of these crash programs. For example, although the EORD credit program had been functioning for four years, no study had been carried out to evaluate the technical, financial and economic impact of this program at the farm level until the MSU study was undertaken in 1978.

Until recently, repayment, delinquency and default rates have been the only criteria used by the ORDs in evaluating the performance of their credit programs. How efficiently the ORDs are carrying out their credit operations, in terms of procurement of inputs and procedures involving both the provision of credit and collection of repayments, has never received the attention it deserves.

Another extremely important issue which has not been fully addressed, is the extent to which farmers understand the credit programs of their ORDs. Credit has been extended to farmers on the assumption that they understood not only the objectives and functioning of the program, but also the cost and terms of the loans as well. To what degree is this assumption valid? In a preliminary study, Zalla [1976] reported that some extension/credit agents in the Eastern ORD believed that a major cause of farmer non-repayment was due to the lack of basic knowledge of the operating details of the credit program.

Other important points which need to be explored involve the reasons for non-participation of some farmers in the ORD credit program. Are there other costs associated with that participation that make farmers reluctant to join the formal credit program? Is the subsidized interest rate a crucial variable in the farmers' perception of the advantages of the ORD credit program? Answers to the above questions would certainly help improve the design of ORD credit programs.

There is an informal credit system in the Eastern Region in which farmers borrow from various sources for various purposes including consumption, social events and non-farm activities. Based

on informal interviews with EORD's field agents, Stickley [1977], for example, reported interest rates varying from 67 percent to 140 percent per year in the informal credit sector.

Numerous writers have underscored the importance of collecting empirical data on informal financial markets in rural areas. Donald [1976, p. 77], for example, notes that "rather little is known with any precision about informal credit, either in its aggregate values or in its distribution among types of lenders." Along the same lines Gillette and Uphoff [1973, p. 141] claim that " . . . it is worth the time and energy required to gain detailed information concerning local conditions, especially the informal economic system, and to attempt to adapt government programs to these conditions." It seems obvious that research on informal credit can provide valuable information which will help improve formal agricultural credit programs. Adams and Kato [1978, p. 8] contend that: "More research should be carried out on informal credit systems in rural areas. In some cases, it may be possible for formal lenders to adapt techniques used by informal lenders." In addition, the results of such studies may be useful in the design and implementation of alternative lending policies to respond to farmers' needs. It is for these reasons that the present study includes both formal and informal credit systems.

Another important area of interest is the issue of rural savings. An important hypothesis which has been recently put forward by rural development specialists is that, contrary to the development literature of the 1950's and the 1960's, there is a substantial saving potential in the countryside. An increasing number of researchers have provided evidence that such potential does exist

in rural areas of developing countries in general, and in black Africa in particular [Bouman, 1977; Delancey, 1978; Haggblade, 1978; Miracle et al., 1980, and others]. The problem, these writers contend, is how to build appropriate institutions to mobilize these hidden resources to finance development programs. But the extent to which this hypothesis is borne out by the facts, at least in the Eastern Region of Upper Volta is still an empirical question that needs to be addressed. What are the forms under which savings are kept? Apart from borrowing, are there other sources of liquidity which farmers can access when need arises?

3. The Objectives of the Study

The general purpose of this study is to generate basic information on agricultural credit in the Eastern ORD, including an analysis of the economic and institutional constraints on the performance of formal (ORD) and informal credit, and the profitability of credit at the farm level.

The specific objectives of this study are to:

1. describe Upper Volta experience in agricultural credit in a historical perspective with emphasis on the causes of success and/or failure;

2. describe the functioning of the Eastern ORD's credit program, including the understanding and attitudes of farmers toward the ORD's credit program;

3. analyze the performance of the Eastern ORD's formal credit program;

4. describe the traditional informal credit system;

5. analyze the performance of the informal credit system and the attitudes of farmers toward credit and savings; and

6. derive policy implications for improving existing credit programs and designing alternative lending programs to improve the income and welfare of rural people.

It is hoped that the results of this study could be useful not only to EORD decision-makers but also to other Upper Volta policy-makers and international agencies interested in contributing to the development efforts in countries with similar conditions.

4. Organization of the Study

The remainder of the study is organized into seven chapters. Chapter II provides a brief survey of major issues in agricultural credit in developing countries. Chapter III presents a detailed description of the research site and the research methodology used to design the basic farm survey and the supplementary questionnaires on farm credit. Chapter IV will provide an overview of Upper Volta's historical experience with agricultural credit and describe the functioning of the EORD's current credit program.

The performance of the EORD credit system is analyzed in Chapter V using both secondary information and farm survey data. Repayment performance will be analyzed using appropriate indicators. The degree of farmers' understanding of the credit program and their perceptions of its advantages and disadvantages will be addressed. The impact of medium term credit on production, and income will be analyzed using technical efficiency measures and costs/returns derived from farm budgets. This chapter will also address the equity issue.

Chapter VI will provide a detailed description of the informal credit system. Cash and in-kind credit transactions will be described in terms of number, value, sources, terms and purposes. An in-depth analysis of the structure and performance of this informal system as well as farmers' attitudes toward credit and savings is presented in Chapter VII. Finally, Chapter VIII will present a summary of the major findings of the study and their policy implications.

CHAPTER II

LITERATURE REVIEW

1. Introduction

Over the last ten or fifteen years both multilateral and bilateral lending institutions have drastically reoriented their policies to focus their attention on the rural poor. As a consequence small farmers credit programs (SFCPs) have been increased in almost all Third World nations. This injection of financial resources has been assumed to be a critical factor in increasing agricultural production. For example, Whitaker [1973] reports that during the 1960-69 decade, almost one billion U.S. dollars[1] was spent on various credit programs in the Third World by international lending institutions. Ladman and Adams [1978] report that the total amount of agricultural loans disbursed in eighteen Latin American countries was $3.282 billion in 1960, $6.316 billion in 1968 and $8.789 billion in 1973.

T.W. Shultz's Transforming Traditional Agriculture [1964] provided evidence from village studies in India, Guatemala and other countries that traditional farmers were "efficient but poor." Shultz hypothesized that the introduction of new technology and investment in human capital would provide profitable income streams

[1]This amount was provided by the Inter-American Development Bank (IDB), the World Bank and USAID.

which would increase output and earnings of farmers in the Third World. The Shultzian hypothesis provided a solid foundation for the provision of credit to small farmers because it was assumed that the availability of credit would enable farmers to finance the acquisition of new technology. The rationale behind the provision of credit to farmers was based on the assumption that there was a lack of such resources for acquiring both durable assets (machinery, various implements, draft animals, etc.) and working capital for seasonal inputs (fertilizers, improved seeds, pesticides, insecticides, etc.). Shultz's emphasis on investments in human capital was advocated to ensure that the farmer was properly using the new inputs.

2. Major Issues in Formal Credit

Scholars have advanced numerous ideas about the function and role of agricultural credit in the development process. According to Lele [1974], an agricultural credit system "must" facilitate the free transfer of resources among sectors, among regions and across income classes in order to bring about an efficient allocation of scarce resources. In addition, it was assumed that a credit system was needed to finance technological change and mobilize savings from the increased incomes generated by the expansion of agricultural production. Jones [1971] contends that agricultural credit can (1) mobilize loanable resources from the economy; (2) supply these loan funds for the purchase of productive assets; and (3) provide technical assistance, if needed, at the farm level (including financial and managerial assistance). Galbraith [1952, p. 32] argues that ". . . agricultural credit clearly does become a strong force for further

improvement when a man with energy and initiative who lacks only the resources for more and more efficient production is enabled by the use of credit to eliminate the one block on his path to improvement."

In a survey of agricultural credit in Africa, Miller [1977, p. 5] contends that provided that the proper conditions exist or can be created, ". . . well-managed production credit can give agricultural development a strong boost by accelerating the rate of adoption of improved technology by farmers who would otherwise be prevented from using it."

In an insightful article, I.J. Singh [1973] observes that the role of credit changes over time depending on the technological phases in agricultural development with three different roles for agricultural credit. In the first phase of pre-availability of new technologies the role of credit is to (1) drive interest rates down; (2) reduce small farmers dependence on moneylenders; and (3) reduce the monopoly profits of moneylenders. In the first phase, Singh contends that these activities can be carried out without resorting to subsidized credit. The second technological phase is the transition period to the adoption of new technologies. The role of credit in this stage is to (1) provide large amounts of loanable funds to meet a substantially rising demand; which would (2) prevent interest rates from soaring, and hence hampering the adoption of new technologies; (3) tie credit to a new technological package; and (4) establish local rural credit institutions that would bring about competitive conditions in rural capital markets. In the third phase after new technologies have been adopted the role of the credit program is to (1) strengthen credit institutions; (2) mobilize

savings from the expanded farm earnings; and (3) make rural loan associations self-supporting by a slow phasing out of the initial special program and thus letting the newly developed rural financial markets take over.

Although Singh's three-step credit story is theoretically very appealing it nevertheless raises some practical questions about the kind of credit to be extended and the form in which loanable resources are to be provided to farmers in each phase. In the first phase, for example, it is not at all clear what kind of credit should be extended to farmers in the absence of new technologies. If credit is not made available for consumption purposes, it is difficult to envision how rural interest rates can be reduced.

In reviewing the literature, one is surprised to find how little research has been done on the measurement of the extent of achievement of the goals assigned to credit institutions. Although an increase in farmers' income is an important objective, not much has been done to generate "before" and "after" facts that would give an idea of how much progress has been made toward reaching this goal. Another objective is to get small farmers out of the "clutches" of the exploitative practices of money lenders; yet little, if any, has been done to document how various programs have helped reach this objective.[1]

Turning to some organizational and operational problems of formal credit institutions, Brake [1973] has pinpointed a number of

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[1]The few studies of money lenders are as follows: Africa: Roberts [1973], Matlon [1977]. Asia: Long [1973], Barton [1977], Burcroff [1973], Kyu [1973], Sacay [1972], Harriss [1980], and others. Latin America: Nisbet [1967], Norwell and Wehrly [1973], Gladhart [1973], etc.

serious difficulties, including the lack of adequately trained personnel well fitted to the program under consideration and excessive levels of decision-making. These shortcomings have often resulted in high administrative costs, untimely provision of credit and lack of clientele participation in the decision-making process, especially at the local level.

French [1973], like others, has pointed out that better performance could be achieved by formal credit organizations through simplified procedures; better communications and coordination within the institution; better working relationships and closer linkages with other organizations engaged in complementary activities (extension and marketing) as well as with farmers themselves; and finally, by making program objectives and strategies more coherent.

There have been numerous studies of the causes of low repayment rates of formal lending institutions. Major causes of delinquency and/or default have been reported to be related to both borrowers' attitude toward repayment and ineffective collection procedures of lending institutions. On the borrower's side, research does not seem to support the hypothesis that non-repayment is strictly related to income. For example, Gordon [1976], Miller [1977] and Vogel [1977, 1978] report on many cases where borrowers had sufficient income to repay their loans but they chose not to do so. They also report high default rates among rich farmers. Hence, a number of reasons have been advanced [Boakye-Dankwa, 1979] to explain non-repayment, including farmers according low priority to repaying public credit institutions compared to private lenders; farmers impressions that public loans are gifts by government in exchange for political support;

farmers initially intending to repay but ending up defaulting because they witness others getting away with it, etc.

Turning to the lender's side, Von Pischke [1976] and others note a number of factors related to the credit institution which affect delinquency and default, including untimely provision of credit and collection of repayment; poor recording of repayment and bookkeeping; lack of sanctions against delinquent borrowers; corruption within the credit institution itself; political pressure which diverts loans from target groups; lack of farmer education as to the consequences of default; and measurement difficulties that make repayment problems hard to manage.

Although delinquency (or repayment) may be an important indicator of the financial viability of a credit institution, delinquency is by no means the only criterion of the performance of a credit program. Tinnermeier and Dowswell [1973] and others, have argued that a credit institution may still be very ineffective even though the delinquency rate is zero. Alternatively, a program with high delinquency may still have some beneficial results, including farmers participation, knowledge and use of new inputs, formation of new farmer organizations, a larger marketable surplus, and higher institutional effectiveness.

Equity questions involving who benefits from the infusion of credit and the accompanying technology and change effects have recently emerged as important issues in credit research. In a study of the credit program of the Chilalo Agricultural Development Unit (CADU) in Ethiopia, Holmberg [1972] and Cohen [1972] report that the very success of the program in increasing production and income

resulted in large scale mechanization which led to the displacement of tenants. More recently, Ladman and Tinnermeier [1981] in their study of the political economy of agricultural credit in Bolivia, reported that credit was used as a political tool with the result that the elite have greater access to credit and a disproportionate share of the increase in income streams. In the Philippines, Sacay [1973] reported that although small farmers (under 3 hectares) constituted 73 percent of the farmer population, they received only 1.6 percent of total production credit.

In setting up agricultural credit programs, Third World countries have used highly subsidized interest rates as a means to encourage the adoption of credit. But numerous scholars have criticized these policies on several grounds. For example, Adams [1980], Gonzalez Vega [1976, 1977], McKinnon [1973], Shaw [1973], and others, have argued that subsidized interest rates are counterproductive because concessional and/or fixed interest rates discourage savings and capital accumulation, bring about the fragmentation of financial markets and introduce efficiencies in the allocation of resources. They also assert that these policies often exacerbate distortions in income distribution and asset ownership. Hence, they advocate flexible and positive real rates of interest in order to mobilize savings and provide adequate returns for lending institutions. Adams [1977] has, more recently, argued that negative real rates of interest have increased the dependence of rural financial markets of Third World countries on funds from central banks, governments and from foreign donors.

3. Major Issues in Informal Credit

In the first chapter we pointed out that many development specialists believe that understanding local institutions is a prerequisite for the design of sound formal credit programs. For example, Tinnermeier and Dowswell [1973] think that social change requires ". . . an insightful understanding of the environment in which the individual and also the credit institution operate." Gotsch [1972] suggests that the characteristics of new technologies, local institutions and existing social structures be taken into consideration in designing credit programs. Brake [1973, p. 216] recommends that "the credit institution should fit the purpose, situation and culture." Brake also contends that a credit program is not likely to perform well in a society where there is no penalty for delinquency or default.

The main reason why studying informal credit institutions is important is to gain hard facts about the attitude and behavior of small farmers in their traditional ways of doing things which in turn may help design more effective formal credit programs. For example, there is a wide range of conflicting views and opinions among development experts on the key issue of savings potential in rural areas. While some economists, such as Adams [1973], believe that there is a large potential, others, such as Davis [1973], think that there is a limited scope for rural savings mobilization. There is also a widespread belief that informal moneylenders charge exploitative or usurious rates of interest due to their monopolistic position in the rural financial market [Nisbet, 1967]. Yet farmers

still borrow extensively from moneylenders and traders despite the availability of subsidized government credit.

Research on informal credit is growing in popularity. For example, Nisbet [1967] interviewed two hundred farmers in Chile and found that 45 percent of them borrowed from the formal credit market whereas 44 percent were doing business within the informal credit market and 25 percent were using both systems. The percentages add to more than 100 percent because some farmers were participating in both markets. Nisbet also found that 74 percent of informal borrowers were landless or owned less than 12.5 acres. Nisbet also reports that the interest rate was related to farm size, with smaller loans carrying a higher rate while the highest interest rates were paid by non-land owners.

A major conclusion of Nisbet's study was that usurious interest rates were charged in the commercial segment of the informal credit system (i.e., moneylenders, shopkeepers, merchants, etc.). The high interest rates were attributed mostly to market imperfections. The lender was either an oligopolist, a duopolist or simply an outright monopolist within the area he was operating. Efforts by state lending institutions to break these monopoly forces were not successful. Also, farmers used the informal credit system because they were reluctant to submit themselves to the paperwork required by formal lending procedures; they were distrustful of the personnel employed by government institutions and skeptical of the new inputs offered them through the formal credit program. Nisbet's study has shown how an informal credit market can be dominated by a handful of lenders exercising monopoly powers. Nisbet has also documented the failure

of state lending agencies to introduce competition in the financial market of rural Chile due to the bureaucratic nature of their operating procedures.

Roberts [1973] carried out a one-shot credit survey in Zambia in November 1969. Since most loans were used for mechanization purposes (especially plowing which took place in November and December) it was assumed that such expenditures would have been incurred by the end of November. Roberts assumed that information collected on private lending and borrowing in November would give an indication as to the extent to which these loans were going to be used over the entire year. The major findings of Roberts' investigation were that some farmers borrowed from informal lenders to meet unanticipated emergency needs (machinery repairs, legal fees, illnesses, etc.). Also private lending and borrowing was not a major factor in productive investment within the sample. Although Roberts made an effort to trace the origin of borrowed funds and uses of these funds, there are some shortcomings in his study. For example, farm expenditures in November accounted for only 16 percent of total farm expenditure in 1968 and 1969. Further, the amounts borrowed and lent for family purposes in November of 1969 were only 4.7 percent and 8.9 percent, respectively, of the overall cash expenses of the sample farmers on farming goods and services during the preceding year.

Roberts' research also included a savings component; he presented evidence to support the hypothesis of high saving potential in rural areas of Zambia. In his three-year study involving a sample of 239 rural families, he showed that, on the average,

sampled farmers saved 30 percent of their income over that period.[1]

Peter Matlon's study [1977] of small farmers in a Moslem area in Northern Nigeria revealed that most borrowing occurred from mid-May to early August which also corresponded to the period of acute cash shortages, especially among lower income households. The study showed that repayments were made for the most part, during the major harvest period. For example, 66 percent of all loan repayments occurred between early August and early February. Matlon found that, on a value basis, 61.6 percent of all cash loans were utilized in production activities and 38.3 percent were used for consumption purposes. A total of 19.9 percent of the consumption loans were used for food purchases and the rest for non-food consumption, holidays and ceremonies.

Matlon reported that the mean annual interest was only 11.4 percent for loans repaid in cash and as much as 142.2 percent for cash loans repaid in kind. No interest was charged the poorest 40 percent of households mainly because the Moslem religion in this region had a built-in system to help shelter the poor. This finding does not support the hypothesis that low income farmers are always charged high interest rates in informal credit systems due to higher service costs and higher risks.

This review has pointed out major lines of research on both formal and informal credit and stresses the need for comparative studies of both types of credit systems. To the author's knowledge,

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[1]These findings were reported by Dale Adams [1973], The Case for Voluntary Savings Mobilization: Why Rural Capital Markets Flounder, p. 320.

a comparative study of both the formal and informal credit has not been conducted in Francophone West Africa. The only published report on informal credit in rural Upper Volta is a preliminary survey conducted by SAED[1] [1975] about the conditions for diffusion of formal credit in the EORD. The only analytical paper on formal credit to date in Upper Volta is Eddy and Baker [1980] study of Matourkou's credit program. This review has pointed out the obvious need for both descriptive and analytical studies of the formal and informal credit systems in Upper Volta.

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[1]SAED: Société Africaine d'Etudes et de Développement.

CHAPTER III

RESEARCH METHODOLOGY

The objective of this chapter is to describe (1) the study site, and (2) the methods used to design, organize and carry out the farm-level survey and the special study of credit.

1. Study Site

This study was undertaken in the Eastern Region of the country. The Eastern Region is an administrative unit officially known as the Département de l'Est (Eastern Department). The Eastern Department, one of the eleven in the country, is administered by a Préfet who is the government's highest ranking official in the region. He is technically responsible to the Ministry of Interior. Each region has a rural development institution, the ORD, which is under the control of the Ministry of Rural Development.[1]

The ORD is managed by a Director appointed by the government. The EORD is divised into eight sectors[2] which are subdivided into sub-sectors. The region is divided into extension zones. Each zone is made up of several villages. Although, theoretically, the ORD provides extension service coverage for the entire region, large

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[1]A complete description of the ORD system will be provided in Chapter IV.

[2]The eight sectors are: Bogandé, Diabo, Comin-Yanga, Matiakoali, Diapaga, Pama, Kantchari and Fada N'Gourma.

areas of the ORD are not covered by extension agents because of high supervision costs and poor transportation and rudimentary communication systems.

1.1 Population and Settlement Patterns

The Eastern Region covers a large area and represents about 20 percent of Upper Volta's total size. The EORD is the largest ORD in the country and it is about as large as the entire neighboring country of Togo.[1] With 400 thousand inhabitants (i.e., less than 10 percent of the country's total population) this region has a low population density relative to other ORDs.[2] Some areas of the ORD have less than one inhabitant per square kilometer [Savonnet, 1968]. A number of reasons have been advanced to explain this low population density. The most common reason is the lack of water during the dry season. Other reasons are the floods in the rainy seasons due to flat land and poor drainage and also disease infestation, especially "river blindness" (Onchocerchiasis), which is severe in some southern parts of the region.

The population is unevenly distributed throughout the region (see Figure 3-1). Major population clusters are found in the northern part around the Bogandé area, in the east around Diabo, in the south of Comin-Yanga along the Togo border, around the west of Kantchari to the Niger border and to the south of Diapaga around the Gobnangou plateau. The population is clustered along the ORD

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[1]Togo has 56 thousand square kilometers.

[2]The center of the country has 25 or more inhabitants per square kilometer.

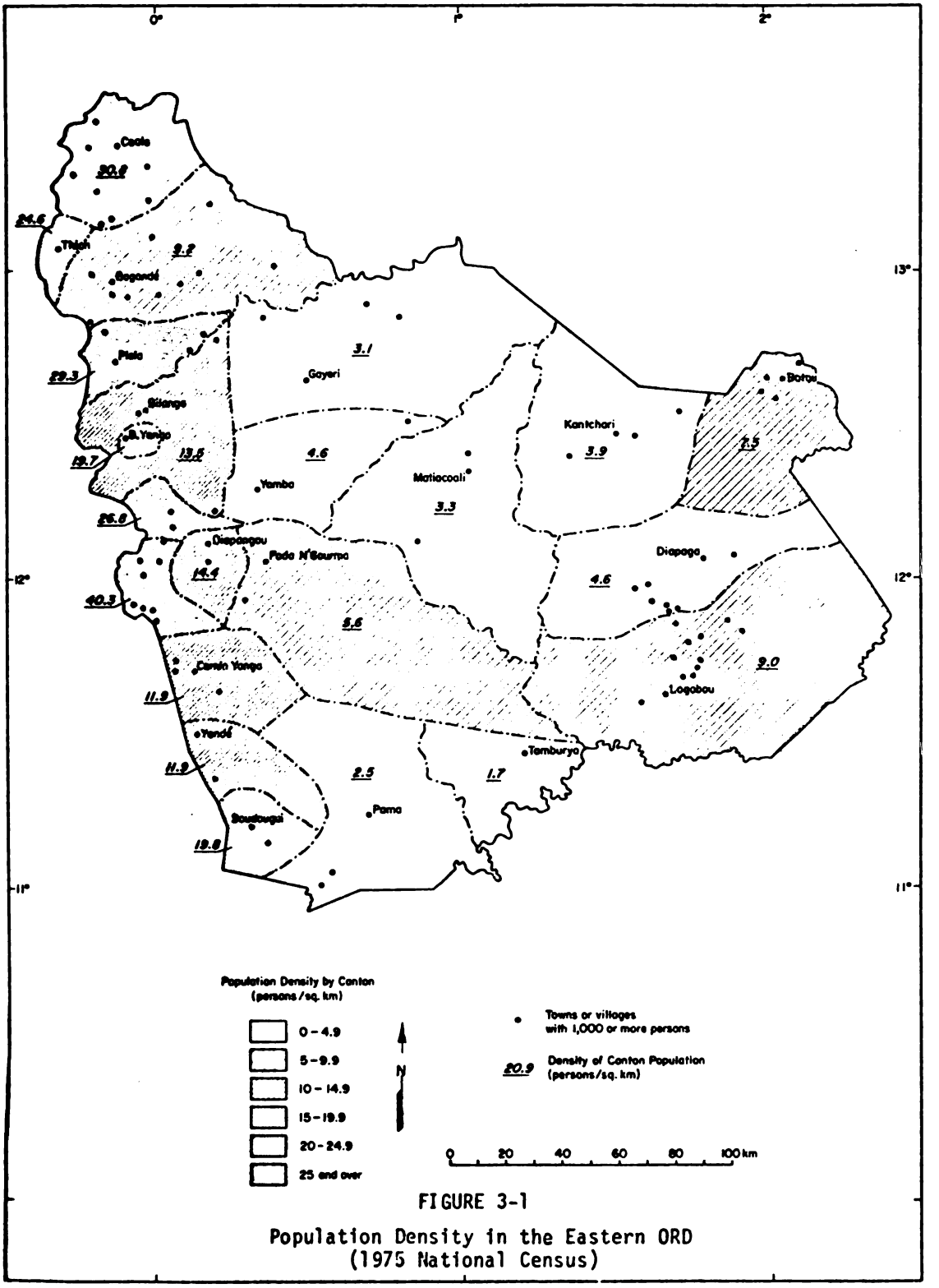

FIGURE 3-1

Population Density in the Eastern ORD
(1975 National Census)

boundaries whereas the center is sparsely inhabited. In 1968 it was estimated that a large proportion of the people were living in widely scattered villages. Fifty-seven percent of the population lived in small villages of 250 inhabitants or less [Eicher et al., 1976]. The uneven distribution of population has some important implications. First, the dispersed population makes it difficult and costly to provide agricultural inputs and marketing services. Moreover, the poor road infrastructure is a serious problem during the rainy season when many zones are isolated from the ORD's headquarters in Fada N'Gourma.

The clustering of population along the ORD's borders is a second major problem. Over the years, strong economic ties have developed between these population clusters and the neighboring regions and/or countries leaving the center more or less isolated economically. The cluster/border effect is illustrated by the large volume of marketing transactions taking place between the Bogandé area and the Koupèla and Kaya ORDs to the west, and between the southern and eastern areas with Togo, Benin and Niger. Though it makes economic sense to develop infrastructure that would foster these ties, it may not be politically acceptable.

1.2 Natural Environment and Farming Characteristics

The natural environment is very heterogeneous. Annual rainfall ranges from slightly over 500 mm. in the north of the Bogandé area, to 1200 mm. in the southern part. Arable land also varies from the light sandy soils in the north to the potentially more fertile heavy-deep-clay-like soils in the south. This diversity has implications for the design of animal traction packages.

Cropping patterns in the Eastern ORD follow soil and rainfall variations. But the most predominantly grown crops are the basic staple food grains--sorghum and millet--which are grown everywhere in the region. Differences in cropping patterns are a function of the combination of these two crops and other minor crops which are grown together as crop mixtures or intercropping. Major cash crops grown in the north (Bogandé zone) are peanuts[1] (or groundnuts) and sesame, though the latter is relatively less important. Although peanuts are also grown elsewhere, rice, cowpeas and cotton constitute the major cash crops in the south, especially around the Diapaga and Comin-Yanga zones. Other minor food crops include corn, ground peas, okra, red pepper, manioc, etc. Yams are grown exclusively in the south (Pama, south of Diapaga to the Benin border) as food/cash crops.

There is a large variation in the size of farms according to different surveys. For example, the ORD estimates show that the average farm size in 1975 was around 15 ha [ORD de l'Est, 1975]. But in 1974, SAED estimated the average size to be 7.0 ha. A year later, in 1975, SAED reported that average farm size was 4.2 ha [SAED, 1975]. In 1978, SAED conducted a more indepth study, including the measurement of fields, and arrived at a figure of 2.44 ha for the average farm size [SAED, 1978]. The discrepancy of these figures illustrates the unreliable data base for the region.

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[1]It is estimated that the Bogandé-Pièla area accounts for as much as 75 percent of the entire region's peanut production.

2. Methods of Primary Data Collection

2.1 The 1978 Farm Survey

This credit study was part of a broader and more comprehensive multidisciplinary technical assistance and research program undertaken over the 1977-81 period in the Eastern ORD by a team of the Department of Agricultural Economics of Michigan State University (MSU) under a USAID financed contract. The MSU contract team was charged with (1) providing technical assistance to the EORD in the areas of supervised credit, marketing, animal traction and range management, audio-visual; and (2) setting up a minimum information system that would provide the ORD with badly needed basic data for policy decisions. The MSU multidisciplinary team was composed of (1) a marketing economist, (2) a production economist, (3) an animal traction specialist, (4) an audio-visual specialist, and (5) a credit specialist. The author was brought in as a short-term researcher on credit.

At the outset, it is worth mentioning that the overall research effort was the first of its kind ever conducted in the region (even in the country), at least in terms of scope and depth. Hence, the research team and the Director of the ORD believed that the research program should be as comprehensive as possible in order to provide a wide range of information on farmers' activities, attitudes, and behavior and understanding of the ORD's various programs. The credit study was an integral part of a broader farm management[1] survey[2] which covered a 12-month period beginning on May 1, 1978.

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[1] For detailed presentation of different methods of farm level

2.2 Administration and Supervision of the Study

The administration, supervision and actual data collection required the combined effort of twenty-eight persons, including the four MSU team members and the author. The field staff was composed of (1) fourteen enumerators who had at least six years of formal education; (2) five supervisors recruited with most of them having ten years of formal schooling; and (3) nine sector-level statistical agents who had at least ten years of formal education and three to six months training in agricultural statistics. All of the statistical agents had been working for the ORD for three to seven years. The office staff was made up of a typist and two statistical clerks. The clerks tabulated data and assisted in measuring fields. The training of enumerators, design and testing of questionnaires, listing of household heads, selection of sample farmers and transport of enumerators to assigned villages took three months (from February to April 1978).

The nine statistical agents and five supervisors made up the field supervisory team. The members of the field team were distributed in the eight sectors of the ORD along with the enumerators they were overseeing (see Table 3-1). Although at first glance the number of supervisors may appear unusually high, the work load and the

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data collection, see Dunstan S.C. Spencer, "Micro-Level Farm Management and Production Economics Research Among Traditional African Farmers: Lessons from Sierra Leone." African Rural Employment Paper No. 3, Department of Agricultural Economics, Michigan State University, September 1972.

[2]More extensive description of the survey can be found in: Michigan State University Contract Team, USAID Integrated Rural Development Project, ORD de l'Est, Fada N'Gourma, Upper Volta, Six Month Report, December 1977-May 1978, August 1978.

TABLE 3-1

Distribution of the Fourteen Field Supervisors
for the 1978-1979 Farm Survey by Sector

ORD Sectors	Number of Supervisors	Number of Enumerators Supervised
Bogandé	2	3
Diabo	2	2
Diapaga	2	3
Comin-Yanga	1	1
Fada N'Gourma	1	2
Kantchari	1	1
Matiakoali	1	1
Pama	1	1
Headquarters in Fada	3	-
Total	14	14

enormous responsibilities they were expected to assume justified this number.

The responsibilities of supervisors were as follows:

1. assisted interviewers in arranging an interview schedule in sample villages in order to minimize travel distances and time;

2. checked data recorded for mistakes, completion and consistency;

3. attended interviews to make sure questions were well understood in local languages;

4. carried out preliminary tabulations;

5. disseminated new questionnaires and information from the research team;

6. measured fields, laid out yield plots and helped interviewers weigh yield samples; and

7. visited interviewers at least three times a week and resolved problems with reluctant farmers.

The overall survey supervision was the responsibility of the MSU team members, including the writer. All team members traveled extensively, visiting each enumerator and each supervisor at least once every two or three weeks. On the average, two of the five team members were on the road on a given work day. Given the large size of the ORD it was estimated that about 40 percent of their work time was devoted to riding.

2.3 Sampling Procedures

2.3.1 Definition of a Farm Household

Since the farm household was the primary unit of analysis there was a problem of defining what a farm (or agricultural) household meant. Generally in Upper Volta villages are made up of clusters of compounds. Each compound is composed of several housing units providing shelter to one or more nuclear families of the same extended family.[1] These nuclear families may perform farming activities either together or separately.

The farm household was defined as the family production unit which farmed at least one major field and controlled the grain output of that unit. Moreover, all farm management decisions of the household were assumed to be made independently of other households. With such a definition a farm household may consist of one or more nuclear families (but rarely unmarried individuals) depending on whether or not the above criteria were met.

2.3.2 Village Sampling

As was seen earlier, the Eastern Region[2] is heterogeneous both in terms of rainfall and in terms of cropping patterns. The objective of the village sampling procedure was to attempt to include the most important farming systems in each major ecological zone. At the same time there was the concern of choosing villages in clusters to

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[1] An extended family may be made up of brothers, uncles, sons along with their wives and children. The older brother, in addition to being the head of his own household, is also the head of the compound. The French word concession is translated into compound.

[2] Eastern Region and Eastern ORD are used interchangeably.

minimize the travel time of enumerators (about 25 km radius).[1] Delimiting such clusters was difficult due to the general lack of secondary data and the inconsistency of the data. For example, the village lists of the 1975 National Census were not identical to the villages of the administrative units of the ORD, nor did they coincide with villages on the most detailed maps available (1:200,000). To get around these obstacles, villages were selected by using the following method. First twelve "zones of interest" were chosen according to the following criteria:

1. distribution of population in the region;

2. ecological zones defined by the ORD's Bureau of Agricultural Production according to rainfall, cropping patterns and soil differences;[2]

3. zones where animal traction was used intensively (Pièla, Diapangou, Diabo, Ougarou/Matiakoali and Diapaga;

4. size of the sector; and

5. accessibility by supervisors on motor bike.

The second step consisted of listing all the villages contained in each "zone of interest" using the 1975 census village lists. The last step consisted of randomly selecting two villages from each non-animal traction zone. Only one village was randomly selected in the other four animal traction zones, except in the Logobou zone where two random villages were chosen. In addition to these random sample

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[1]Enumerators traveled by motor bikes. Some of them had to cover as many as 30-35 km from one village to the next.

[2]The different ecological zones were previously established by an FAO agronomist. J. Denis, Détermination de Zones homogènes en vue de l'installation d'un réseau d'Essais Multilocaux.

villages, one village was purposively selected in each of the four animal traction zones and three villages were selected purposively in the fifth zone (i.e., Diabo zone). In total, there were twenty randomly selected villages on a subjective stratification basis. Seven animal traction villages were purposively selected according to the number of animal traction farmers.

Although villages were chosen from each "zone of interest" on an equi-probability basis, there was no attempt to use probabilities proportional to their size. The subjective stratification factors were described earlier without taking size into consideration. The reason why it did not appear necessary to use size either as a stratifying factor or as a variable upon which to compute proportional probabilities for village selection was based on the assumption that village size, within the same zone of interest, did not have a significant bearing on farming systems (or cropping patterns) given the sparse population settlement patterns described before. This hypothesis could be tested using production data.

Table 3-2 presents the list of the twenty randomly selected villages and the seven purposive villages. Villages where enumerators were residing are also indicated in this table. Because animal traction farmers in the sample more often come from a region rather than from specific villages, purposive villages are listed as regions on Table 3-2. Hence, this table shows the population figures for the random villages but not for animal traction regions. A map showing random villages as well as purposive villages (or animal traction regions) is presented in Figure 3-2.

TABLE 3-2

Location of Sample Villages and Regions of Surveyed Animal Traction Farmers, 1978-1979 Farm Survey

Sector	"Zone of Interest" (Sub-Sector)	Village	Region of Surveyed Animal Traction Farmers	Population of 1975 Census
Bogandé	Bogandé	Gbanlamba Komboassi*		1160 1119
	Mani	Lanyabidi Bonbonyenga*		161 604
	Piela	Dabesma*	Piela Region	234 - c
Diabo	Diabo	Monkontoré*	Lantaogo Region Diabo I Region* Diabo II Region	377 - - -
Diapaga	Logobou	Namponkoré* Kindikombou*	Logobou Region	2138 2032 -
	Partiaga	Bomondi* Foanboanli/ Dubcaali		1063 n.a.
Comin-Yanga	Yondé	Ouobgo* Kondogo		627 302
Fada N'Gourma	Diapangou	Tilonti*	Diapangou Region	402 -
	Botou	Botou[a]* Ougarou[b]		600 547
Kantchari	Kantchari	Mantchangou* Moadagou		525 285
Matiakoali	Ougarou	Poniokonli*	Ougarou/ Matiakoali Region	315 -
Pama	Pama	Pama	Tindangou* Kpajali	462 n.a.

SOURCE: 1975 National Census

*Denotes residences of fourteen interviewers.

[a]North of Fada

[b]North of Fada

[c]Not applicable; 1975 census data missing because of confusion over names of villages.

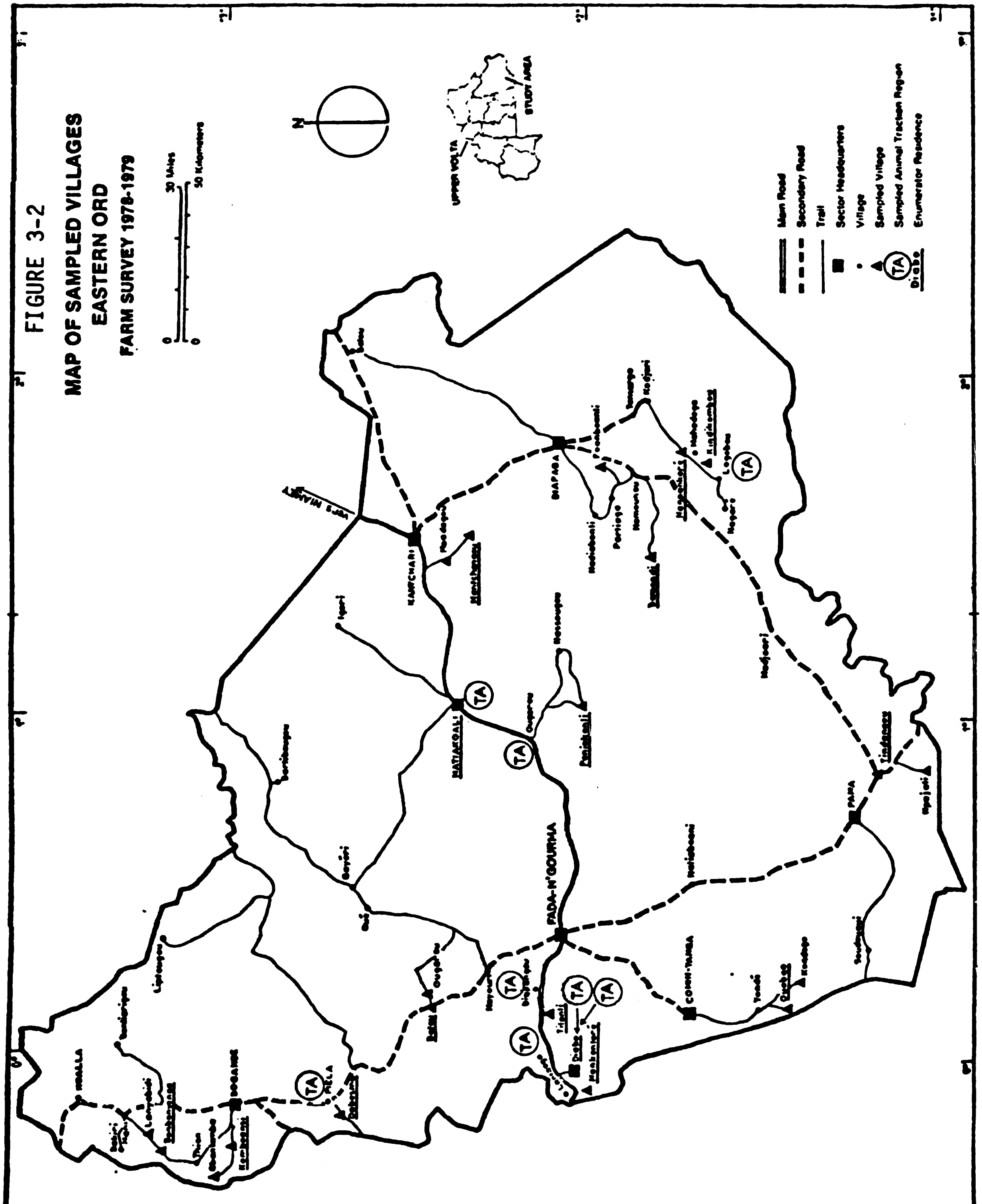

FIGURE 3-2
MAP OF SAMPLED VILLAGES
EASTERN ORD
FARM SURVEY 1978-1979

2.3.3 Farm Household Sampling

Households in the twenty random villages were selected on an equi-probability random sampling basis. The sample frame used in this exercise was provided by the 1975 census household list. However, these lists had to be updated and checked for missing or new households.

To update the household lists in the twenty random villages, four teams conducted meetings in the proposed villages to be included in the survey. Compound heads attended these meetings and assisted in drawing up final agricultural household head lists. Since the 1975 census used the narrow nuclear household, an adjustment was made to get the kind of households that would conform to our operational definition. The resulting list contained either independent nuclear households or farming households consisting of several nuclear households.

The survey team incorporated new households that had settled in the village since the 1975 census in the lists before the sampling took place. Although the 1975 census turned out to be fairly accurate, there were inconsistencies in the spelling of names. Migration, death and fragmentation of compounds affected about 5 percent of the households listed in the 1975 census. The redefinition of households according to our criteria reduced the number of households in the 1975 census by 10 to 15 percent. The updating exercise was not a time consuming process because it took place during the slack (dry) season when farmers were more or less idle, and only the names of heads of households were updated. Thus, the procedure of using village meetings turned out to be an extremely efficient

method of both updating the list of household heads and drawing the sample on the spot.

Eighteen[1] farm household heads were selected in each of the twenty random villages from April 23 to May 5, 1978, during a meeting of the village. From an urn containing numbered tickets corresponding to the village household heads' numbers, a village representative[2] randomly drew the sample farmers.

In the five animal traction regions, household heads were selected on a purposive basis. Sector chiefs in collaboration with their sub-sector chiefs and extension agents, on our request, provided the list of the "best" animal traction farmers. The reason why a random sampling procedure was not used was simply due to the fact that animal traction technology was relatively new. An evaluation of the animal traction based on the average adopter, with one or two years of experience, would not reflect its potential. Eighteen animal traction farmers were chosen from the lists in each of our animal traction regions. Due to a long history of intensive animal traction in the Diabo region, eighteen traction farmers were chosen from each of three animal traction sub-regions (Diabo I, Diabo II and Lantaogo).

In summary the 1978 MSU farm level survey included 486 agricultural households selected from 27 villages and regions in the Eastern ORD. Of these 486, 360 farmers were selected on a random sampling basis to cover the principal agricultural systems of the

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[1]Except in the village of Botou where 19 farmers were selected. In the village of Kpajali all the 17 households that made up the village were selected.

[2]To avoid any problem with local protocol the village chief usually drew the sample.

entire region and 126 animal traction farmers were purposively chosen to evaluate the ORD's animal traction and credit program. In addition, 120 randomly selected households and 42 "best" animal traction users were chosen to obtain seasonal labor profiles. Of the 486 farmers, only 6 dropped out of the study during the 12-month survey period. Of the six, three had passed away, one had moved out of his village and two had quit farming. Hence, the final sample of 480 farmers was made up of 355 randomly selected farmers and 125 animal traction farmers. The distribution of sample villages and farmers is recorded on Table 3-3.

2.4 Survey Instruments, Sample Distribution and Interviews

2.4.1 Survey Instruments

The basic survey instrument used in this study of credit consisted of 5 special questionnaires which were designed to collect supplementary information from the same sample of 480 farmers included in the farm management survey. The first credit questionnaire was administered to all 480 farmers on a monthly basis for the entire 12-month period because it was assumed that farmers do not borrow or lend every day or every week and that a monthly interview was adequate to capture credit transactions. This monthly questionnaire was designed to collect data on:

1. lending in cash and in kind;
2. borrowing in cash and in kind;
3. repayment of borrowed cash and borrowings in kind; and
4. repayment received for both loans given in cash and in kind.

Information was also collected on the amount of the loan, terms,

TABLE 3-3

Distribution of the 480 Sample Agricultural Households
by Agroclimatic Zone, Village and Sub-Sample

ZONE	VILLAGE	Number of Households in Each Village or Region	
		Traditional	Animal Traction
Bogandé	Gbanlamba	18	-
	Komboassi	18	-
Mani	Lanyabidi	18[a]	-
	Bonbonyenga	18	-
Piéla	Dabesma	18	-
	Piela	-	18
Diabo	Monkontoré	18	-
	Lantaogo	-	18
	Diabo I	-	17
	Diabo II	-	18
Logobou	Namponkoré	18[a]	-
	Kindikombou	18[a]	-
	Logobou	-	18
Partiaga	Bomondi	18	-
	Dubcaali	18	-
Yondé	Ouobgo	17	-
	Kondogo	18[a]	-
Diapangou	Tilonti	18	-
	Diapangou	-	18
Botou[b]	Botou[b]	18[a]	-
	Ougarou[b]	19[a]	-
Kantchari	Mantchangou	17	-
	Moadagou	18	-
Ougarou	Poniokonli	18	-
	Ougarou	-	18
Pama	Tindangou	16	-
	Kpajali	16	-
Total		355	125

[a]Village chief included as a non-randomly selected household head.

[b]North of Fada

interest charges, distance where transaction took place, gifts to lender or from borrower and category of lender.

The second credit questionnaire was a one-shot questionnaire administered to all 480 farmers at the end of the 12-month farm management survey in order to obtain information about loans outstanding at the end of the 12-month period. The third one-shot questionnaire was designed to obtain information needed to cross-check the accuracy of the data obtained on the monthly credit questionnaire and to gain an understanding of farmers' attitudes toward modern banking practices, savings in formal savings institutions, and penalties imposed on people who do not repay their debts to informal lenders. This questionnaire was also designed to collect data on sources of cash (other than credit) to meet emergency needs, and forms in which liquidities are invested (or saved).

The fourth questionnaire was a one-shot questionnaire and was administered to the sub-sample of 125 animal traction farmers. It was designed to obtain information on farmers' understanding of the medium term credit terms, costs and purpose. This questionnaire was also designed to collect data on hidden costs such as gifts to extension/credit agents, distance traveled for loan application and the number of visits to extension/credit agents.

The fifth questionnaire was a one-shot questionnaire administered to all 480 farmers to obtain information on reasons for not adopting the animal traction technology, farmers' perceptions of the advantages and disadvantages of the EORD credit program and alternative informal sources of credit for agricultural production purposes.

2.4.2 Sample Distribution and Interviews

Each of the fourteen enumerators was assigned two villages or regions (i.e., 36 households in total) except in the Logobou zone where three villages were a joint responsibility of two enumerators. All households (both randomly and purposively selected) were interviewed once a month for most of the input-output and credit data (borrowing and lending). In each village six out of the eighteen households were interviewed weekly to get household member and field specific labor time data. Thus, each enumerator interviewed twelve farmers on a weekly basis[1] and twenty-four on a monthly basis. On the average, then, each enumerator was handling eighteen interviews weekly.

2.5 Data Coding, Verification and Processing

The data on the monthly credit questionnaire were precoded and directly typed onto the computer at the Centre National du Traitement de l'Information (CENATRIN), a computer center located in the capital city, Ouagadougou. The four one-shot questionnaires were coded at the EORD headquarters in Fada. Initial verification for errors were done both in the field and in Fada. Final clean up, validation and creation of files were carried out at CENATRIN. Preliminary data analysis started at CENATRIN, but more indepth analysis was subsequently carried out at Michigan State University using mostly SPSS.[2]

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[1]The six households which constituted the weekly sample were randomly selected in the random villages. The first six of the list were selected in each village. The six best animal traction farmers were selected for the intensive weekly interviews.

[2]SPSS: Statistical Package for the Social Sciences.

The farm management and credit surveys were carried out without any major obstacles. Inasmuch as farmers are suspicious of surveys because of the fear of getting tricked up for tax purposes, the data collected were acceptable given the sensitive and private nature of the questions asked. Inaccuracies that may have occurred were more often due to weaknesses of enumerators than the reluctance of farmers to answer questions.

The only major problem encountered was at the beginning of the survey when two villages categorically refused to participate. These two villages were immediately replaced in order that the survey could start on schedule.[1] Village chiefs were all included because they could exercise pressure on those farmers who may have been tempted to drop out.[2]

3. Summary

This credit study was the first of its kind ever conducted in Eastern Upper Volta and it was a part of a farm management survey of 480 farmers which was carried out by an MSU multidisciplinary team over a 12-month period in 1978/79. The purpose of this credit study was to provide a sound information base about the EORD formal agricultural credit program including:

1. farmers' real costs of participation in the credit program,

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[1]The two villages that refused were Ougarou and Foanboanli. This Ougarou is not to be confused with the Ougarou listed on the twenty random villages.

[2]See Table 3-3 for villages where village chiefs were included as non-randomly selected household heads.

2. farmers' understanding of the objectives and conditions of the formal credit program,

3. the impact of credit on production and income of farmers, and

4. the distributional effects of the formal credit program. The second purpose was to gain an indepth understanding of the operation of the informal credit system, including: its function, role and purpose, structure, operating procedures, and performance.

This study seeks to generate a broad knowledge base that will be useful in improving the performance of the EORD's formal credit program and useful in the design and implementation of alternative lending programs in the ORD.

Five special credit questionnaires were administered to the sample of 480 farmers and sub-samples in order to supplement the farm management data collected over a 12-month period, April 1978-May 1979. The first credit questionnaire was a monthly questionnaire which was administered to all 480 farmers over the same 12-month period to record lending and borrowing transactions in the informal credit system as well as repayment and other related information.

The second informal credit questionnaire was a one-shot questionnaire administered to all 480 farmers at the end of the survey in order to obtain information on loans outstanding at the end of the 12-month period. The third informal credit questionnaire was also a one-shot questionnaire administered to all 480 farmers. This questionnaire was designed to provide useful information on farmers' attitudes regarding various aspects of banking, credit, investment and savings.

The fourth credit questionnaire was a one-shot formal credit questionnaire administered to the sub-sample of 125 animal traction farmers. This questionnaire was designed to obtain information on farmers' understanding of the medium term credit program and to collect data on hidden costs such as distance traveled for loan applications and number of visits to credit agents.

The fifth credit questionnaire was a one-shot formal credit questionnaire administered to all 480 farmers. This questionnaire was designed to obtain information on reasons for not adopting the animal traction technology, farmers' perceptions of the advantages and disadvantages of the EORD credit program and their perceptions of availability of alternative informal sources of credit for agricultural production purposes.

Fourteen enumerators were hired and trained for the survey. They were supervised by five supervisors and nine statistical agents who were responsible for checking data for errors, consistency, measuring fields, placing yield plots, and carrying out preliminary data tabulation.

Data coding and verification were performed at the EORD headquarters in Fada. Data validation, processing and initial preliminary analysis were carried out at the computer center (CENATRIN) in the capital city, Ouagadougou. Final indepth analysis was carried out at the MSU Computer Center.

CHAPTER IV

AGRICULTURAL CREDIT IN UPPER VOLTA: HISTORICAL PERSPECTIVE AND CURRENT PROGRAMS

The purpose of this chapter is to provide a historical perspective on past and present agricultural credit in Upper Volta with emphasis on the Eastern ORD in order to see what lessons can be learned from past successes and failures. This chapter will review the early colonial experience and then the various credit programs that have been established during the post-independence period.

1. The Colonial Era

Upper Volta has a relatively long history in agricultural credit. Early experiences go as far back as the late 1920's under French colonial rule when French credit institutions were transferred to Upper Volta, and in other French colonies. The credit system introduced by the French colonial rule[1] was a three-level private organization with the following structure:

1. mutual organizations were set up at the village level;

2. mutual organizations were organized into local credit unions; and

3. central credit unions were organized by bringing the local credit unions together.

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[1] For more information see: Guy Belloncle, Le Crédit Agricole Dans Les Pays d'Afrique d'Expression Francaise au Sud du Sahara, Rome: FAO, 1968.

But, for various operational and managerial reasons, this three-tiered system was dropped after a few years.

The second colonial attempt took place in the early 1930's when colonial authorities resorted to a public credit system known as the Caisse Centrale de Crédit Agricole (CCCA). The CCCA relied on the Societés de Prévoyance[1] (SDP) to provide credit at the village level. The prospect of success seemed a little better than the previous system but the CCCA was soon overcome with problems. For example, the colonial rulers did not fully understand the underpinnings of local institutions. The CCCA stated that only farmers with a state title (proof of legal ownership of land) to serve as collateral would be eligible for a loan. Obviously this requirement disqualified virtually every farmer because agricultural land was (and still is) under the collective ownership of the community as a whole and the individual farmer only had a right to use it.

The third colonial experiment was an attempt by the SDP to extend credit for agricultural production although this was not their main purpose. The SDP was the first credit institution in Upper Volta to provide peasants with improved seeds, pesticides, small implements and equipment. Credit was provided through the Fond Commun, the resources of which were made up of contributions from individual members. In addition, and more importantly, loanable funds were obtained through public subsidies and by loans from the CCCA.

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[1] Societés de Prévoyance: the main purpose of this institution was to purchase, store and resell grain to people both in rural areas and in the cities.

Although the SDPs were very close to farmers, they ended up experiencing extremely high default rates. The unfavorable default rate depleted their common fund and they had to request more subsidies to survive. But, the SDP credit program collapsed after a few years.

The SDP credit experience was an important phase in the credit history not only of Upper Volta but also of most Francophone African countries. It left deep marks in these countries, especially in the peasants' minds. First, the SDP provided loans to peasants to help them get through the "hungry season."[1] Second, peasants perceived credit to be an avenue for "free" equipment loans because they were not forced, in any way, to repay their loans.

After these first three failures, it was felt that there was a need for a fresh approach. The fourth experiment then, was an attempt by the French Caisse Centrale de la France d'Outre Mer to establish a second generation of credit unions called Mutuelles de Crédit (MC). These MCs were created in the late 1940's and early 1950's based on assumed cooperation of Africans especially at the village level. Village credit cooperatives were established based on three principles: first, the principle of unlimited joint liability among individual members; second, the principle of limiting the cooperative to a restricted well-defined geographical area; and the third principle was that credit would only be extended for production purposes. A program for the utilization of credit funds was part of the credit system. A structure was set up to make sure

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[1]The "hungry season" is that preharvest period when food stocks are at their lowest point.

that the money was used for the intended purpose. Thus, supervised credit was born. Unfortunately, after a few years, the MC experienced heavy losses due to loan repayment delinquencies and default. The joint liability and collective responsibility, which was supposed to exercise peer pressure on delinquent members, did not work.

2. The Post-Independence Period

After independence in 1960, three major French agencies were involved in agricultural development in general and in agricultural credit in particular: Société d'Aide Technique Et de Coopération (SATEC), Compagnie Française Des Fibres Textiles (CFDT), and Bureau Pour le Développement de la Production Agricole (BDPA). Although these three agencies were engaged in providing agricultural credit, SATEC and BDPA were the only ones which were concerned with improving food crop production. SATEC's credit experience has been well documented.

2.1 SATEC's Credit Experience

SATEC started an agricultural credit program in Upper Volta in 1961 with activities concentrated in the central and northern parts of the country. The objectives of SATEC were to increase food crop production and the cash income of peasants.[1] A typical SATEC package included the following: a donkey, a harness, and a plow, for a total value of 12,500 CFA. The loan was to be repaid over a four-year period with a 5 percent interest rate. According to SATEC, the introduction of animal traction was assumed to have an acreage effect

[1] These are the same objectives pursued by the present Eastern ORD credit program.

of 60 percent and a yield effect of 20 percent. SATEC estimated that the expected increase in gross revenue would be just about 100 percent (from 14,960 CFA to 29,680 CFA) [SATEC, 1964]. Such a performance would be very attractive to farmers as annual loan repayment was only 3,670 CFA. Credit was extended to farmers through village cooperatives serving as intermediaries between the lending institution and the individual farmer. These cooperatives were more or less organized along the same lines as the MC described earlier. A total of 545 village cooperatives were set up and 8,700 loans distributed between 1962 and 1965 totalling 103,303,000 CFA.

Repayment performance for SATEC's program was rather good in the first two years but in the third year (1964-65) the default rate jumped to 46 percent. Several explanations seemed to be important in explaining the increased default rate. The first and perhaps the most important reason was the poor organization and the lack of educational and training components in the village cooperatives. If a peasant obtained a loan then he was arbitrarily assigned to a cooperative in a village sometimes located far away from his home. The lack of a cash crop was a second reason. This is understandable because it is well known that farmers are extremely reluctant to sell their grain food crops to repay loans because food production is kept to meet family consumption needs for the current year and to augment stocks for bad years. The third reason was linked to the date of annual repayment of loans. The June 30 date coincides with the beginning of the hungry season when food stocks are at a low point and cash on hand is scarce. As repayment continued to worsen, SATEC resorted to local government authorities to help collect delinquent

loans. These authorities used threats and other means of pressure to secure repayments. It is reported that a number of farmers sold goats, sheep and chickens to repay their loans. Those who could not repay their loans migrated to other regions or fled to neighboring countries. In summary, village credit cooperatives did not live up to expectations.

2.2 The National Development Bank-ORD's Joint Venture

The National Development Bank (NDB) was created in the mid-1960's by the government of Upper Volta. Although the NDB focused on non-agricultural activities, it was nevertheless entrusted with agricultural credit responsibilities in collaboration with the ORDs. The ORDs were to serve as intermediaries between the bank and the village group organizations (or village pre-cooperatives).

The ORDs were entrusted with the responsibility of selecting farmers for loans. The ORDs required a potential borrower to devote a certain portion of total cultivated acreage to cash crops because it was assumed that it would increase the income flow and repayment prospects. In addition, the ORDs were supposed to process loans, provide inputs such as traction equipment, provide technical assistance and collect the payments for the NDB.

Although it was assumed that the NDB would experience a number of organizational and operational problems in the beginning of its credit operations with the ORDs it turned out that those problems were extremely hard to overcome. Credit was subsidized with the interest rate set at 5 percent. As the default rate increased, the NDB found itself in an uncomfortable financial posture. To make bad

things worse, the relations between the NDB and the various ORDs participating in the credit program were strained. Furthermore, even though the NDB was not the only one to be blamed in its failure to develop a viable agricultural credit program, there were serious reservations about its genuine commitment to the agriculture sector. The NDB made its most important loans to urban businesses, including industrial schemes, private businesses and government civil servants because it was easier and less risky.

The NDB perceived its agricultural credit program as a burden imposed upon it by the government and did everything to prove or to substantiate its allegations that agricultural credit was not working. In any event, the NDB gradually phased out its direct agricultural credit activities but it still provides loans directly to the ORDs. The lesson to be learned from the National Development Bank's credit experience is that a credit institution with multiple responsibilities should not be entrusted with the responsibility for extending credit to the agricultural sector because there will be an unavoidable tendency to channel a disproportionate amount of loans to the less risky industrial/urban sector.

2.3 The Matourkou[1] Credit Experience

The Matourkou credit program was set up as a joint project financed by the United Nations Development Program (UNDP) and by the government of Upper Volta with technical assistance from the Food and Agricultural Organization (FAO). The Matourkou credit program

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[1] Matourkou is the name of the village in Western Upper Volta where the headquarters of the credit program is located.

is probably one of the few, if not the only credit program for food crop production that was relatively successful. But, one cannot jump to the conclusion that it could be duplicated elsewhere in the country for a number of reasons that will be examined below.

The Matourkou credit program covered six villages in the western region of the country.[1] The project was not only concerned with credit activities, but also with land settlement and the training of extension agents. Farmers participating in the program were given eight hectares of land; six of the eight hectares were to be gradually brought under cultivation over a four- to five-year period. The remaining two hectares remained in fallow in any given year on a rotation system. The credit program extended medium term loans over a seven-year period with a two-year grace period and a 5 percent interest rate. In addition to the medium term credit program, short term credit is provided for fertilizer, seeds and so forth. The short term loan was due at the end of each growing season. The medium term loan repayment started in the third year. But, interest was charged from the first year the loan was made. Farmers were required to pay 1,000 CFA for credit application fee and 1,500 CFA insurance for a pair of oxen. This fee is part of the short term liability. Although the Matourkou credit system was designed as part of the extension component of the project's overall concern with the development of the villages, each borrower was individually liable for his loan. A binding contract was signed between the farmer and the project.

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[1] For information about the Matourkou credit program see W.H.A. Peeters, Le Système de Crédit Matourkou, Ministère du Plan, du Développement Rural, de L'Environnement et du Tourisme, August, 1974.

Major characteristics of the Matourkou credit program include the following: first, there was no collateral required to be eligible in the program; second, the traction equipment and draft animals could be repossessed in case of default; and third, the project relied heavily on the will of the farmer to achieve a better standard of living. The credit was designed to help anyone firmly committed to improving his well being.

Two criteria were used to evaluate the performance of the credit program: (1) the demand for credit, and (2) repayment rate. According to the project director, the availability of loanable funds could hardly keep pace with growing demand. The repayment rate, at times, was higher than 90 percent for farmers with three to five years experience. The repayment rate was 57 percent in 1971; 48 percent in 1972; and 109 percent in 1973 and 87 percent in 1974. The repayment rate of 109 percent is due to the dubious practice of transferring unpaid short term loans to the medium term loans outstanding. It would have been more accurate to use collection ratios which excluded repayments for arrears.

The project director contends that the Matourkou credit program has increased farm income. For example, he reports that net revenue per hectare has increased from as low as 2,800 CFA the first year to as high as 33,000 CFA [Peeters, 1974] in some villages over a three-year period. Net income per farmer increased from 19,600 CFA the first year to as high as 109,500 CFA the third year. But one does not know whether the increase in net revenue per hectare was due to an increase in yields or prices or both.

The Matourkou credit experience is regarded as one of the rare successful credit programs in Upper Volta which lends for both cash and food crops. But, a word of caution is in order as Matourkou's case is rather unique in many respects. For example, through a functional literacy program, illiterate farmers are helped to understand the credit program, including the terms, interest rates and how to compute the amounts of installments. Today, farmers manage their credit accounts by themselves. Moreover, the Matourkou credit experience is also unique with respect to its intensive extension services. Matourkou has one trained, competent and highly motivated agent per village. The extension service is one of the most important strengths of the Matourkou credit program. Another unique feature of the Matourkou credit program is the favorable market outlets which are available in the nearby industrial city of Bobo. For example, cotton is bought by CFDT, corn by the brewery, peanuts by the oil company, etc. Finally, in contrast to the Eastern ORD, all six villages are accessible by a year-round road network.

Despite the apparent success of the Matourkou credit program the program has not been sufficiently documented. Technical data of the impact of credit at the farm level are not available and no effort has been made to evaluate the performance of the program in terms of lending cost. In conclusion, the Matourkou credit experience should be carefully studied and components of the program such as the farmers training component should be considered by credit agencies in other parts of the country.

2.4 Other Current Credit Programs

Other examples of successful credit programs in Upper Volta are all geared to the promotion of cash crops, especially cotton. The state cotton corporation Société des Fibres Textiles (SOFITEX)[1] is a vertically integrated operation which provides short and medium term credit to farmers to grow cotton. SOFITEX operates through the ORD's structure. Repayment is almost automatic because the credit payment of a farmer growing cotton is deducted from the sale of cotton purchased by SOFITEX.

The Volta Valleys Authority's (AVV)[2] credit program was based on the Matourkou credit experience. The only difference is that the AVV credit program involves a 7 percent interest rate (instead of 5 percent) and no grace period for medium term credit repayment. Cotton has been introduced as the major cash crop and accounts for about 40 percent of the five to six hectares allocated to each family [Murphy and Sprey, 1980]. Major food crop (sorghum) yields have

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[1]SOFITEX replaced CFDT in 1979. Although SOFITEX operates across the entire country, its activities are concentrated in the Hauts Bassins ORD (Bobo) and the Volta Noire ORD (Dédougou) which produce 90 percent of the national cotton output. Since the mid-1970's the World Bank has been financing a cotton production project in both ORDs.

[2]The AVV was created by the government in 1974 and was entrusted with the responsibility of resettling 120,000 families on 400,000 hectares over a fifteen year period. The project is an outgrowth of the "river blindness" eradication program jointly financed by the World Bank, UNDP/FAO, the World Health Organization and the government of Upper Volta. Up to 1979, 1,826 families were resettled, which is far below the predicted number of 9,700 to 13,700 families. Funding for the AVV project is provided by various international donors and the government of Upper Volta. It is estimated that the average cost of resettling one family is about 12,500 dollars U.S.

been irregular and at times lower than those of traditional farmers. Farm income has been stable in general but has not improved significantly over the years as expected. Repayment of loans has been fairly high due to the sale of cotton. In 1976, overall repayment was 82 percent [AVV, 1977].

3. The Eastern ORD's Current Credit Program

The creation of the ORD's system in the mid-1960's was based on an economic philosophy of decentralization of decisions at the regional level to foster local participation in the definition and implementation of those objectives compatible with the characteristics and natural endowment of the region. When the ORDs were first established they provided extension services and limited agricultural inputs to farmers. But, over the years, the responsibilities of the ORD have expanded to encompass such activities as marketing, veterinary services, animal traction, irrigation schemes, feeder road infrastructure, credit and functional literacy.

In 1974, in a major reorganization, the Ministry of Rural Development increased the ORD's control over previously autonomous services such as livestock, water and forests. In addition, a new rural development strategy was put forward--Community Development--which was designed to help enhance local participation in the identification of and solution to local problems. In this strategy the village was singled out as the basic "cell" of development programs.

Created by Presidential decree in 1968, the Eastern ORD did not become a fully established institution until 1974-75. In 1980 the ORD had five bureaus and twenty sections and sub-sections at the headquarters level as shown in Figure 4-1.

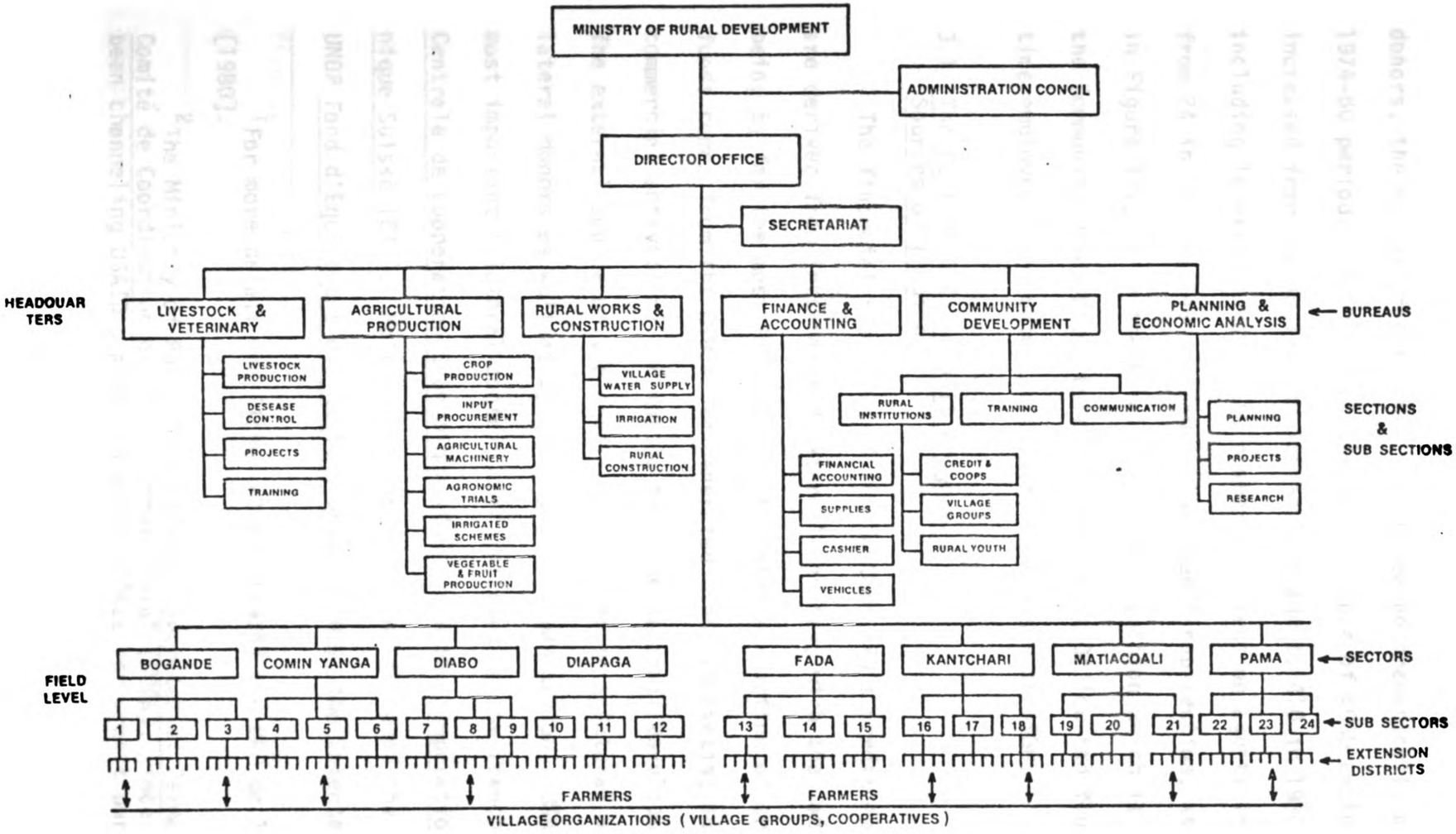

FIGURE 4-1

Organization Chart and Extension Network of the Eastern ORD, 1978-1979

As a result of assistance from FAO, USAID and several other donors, the number of personnel has increased dramatically over the 1974-80 period. For example, the total number of EORD employees increased from 125 in 1974 to 165 in 1976 and to 410 in 1980, including 16 expatriates. The number of extension agents increased from 24 in 1974 to 149 in 1980.[1] The credit sub-section, as shown in Figure 4-1, is in the Rural Institution Section which is part of the Community Development Bureau. The Credit Office had four full-time employees, including an expatriate advisor in 1980.

3.1 The Eastern ORD's Credit Program: Sources of Funding

The financial resources of the Eastern ORD's credit operations are derived from internal and external sources, with the latter being by far the most important. The internal portion of credit funds comes from the ORD's own generated funds (marketing and other commercial activities) but mostly from the National Development Bank. The external source of the credit is provided by bilateral and multilateral donors as well as by a non-profit organization. USAID is the most important bilateral contributor[2] followed by the French Caisse Centrale de Coopération Economique (CCCE) and the Coopération Technique Suisse (CTS). Multilateral institutions included the FAO, the UNDP Fond d'Equipement des Nations Unies (FENU), the Entente Fund and

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[1] For more detail see Eicher et al. [1976] and ORD de l'Est [1980].

[2] The Ministry of Rural Development's Sécrétariat Permanent du Comité de Coordination du Développement Rural (CCDR), since 1975, has been channeling USAID's money to various ORDs for credit purposes. The CCDR was replaced in 1980 by the General Secretariat.

the Fonds de Développement Rural (FDR) of the World Bank. The only private non-profit organization involved in credit activities is the Association Française Pour le Développement International (AFDI).

Each of the various donors is interested in certain types of credit. For example, USAID and AFDI provide loanable funds for animal traction and village cereal banks.[1] FAO, FENU and Entente Fund provide credit for cereal banks; CCCE was providing both medium term credit (animal traction) and short term credit (fertilizers, pesticides, etc.); FDR engaged in short term credit provisions to village groups for more specific agricultural activities such as rice and vegetable production in irrigated schemes and lowlands. CCDR funds were used primarily for animal traction equipment.

A number of the external donors are contributing to the ORD's overall operating budget. USAID, FAO and CCCE, in particular, provide large sums of money for vehicle purchases, maintenance and operating costs as well as for salaries of local extension agents. The ORD receives financial support from the national government but about three-fourths of the ORD's personnel were hired by the ORD on foreign aid financed projects. In times of financial duress the number of temporary personnel (including extension agents, drivers, clerks, etc.) can be reduced.

The total amount of loans by source of financing for the last five years is shown in Table 4-1. USAID has contributed 40.2 percent of the overall credit disbursement followed by the Entente Fund with

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[1]Cereal banks were set up whereby credit is provided to village groups to buy cereals at harvest at a price above the market price and to resell the stocks below market price to group members later in the season.

TABLE 4-1

Amount of Loans Distributed to Farmers in the Eastern ORD
by Source of Funding, 1975-1980
(in CFA)

	ORD (Internal Funding)	USAID	ENTENTE	UNDP/FENU	FAO	AFDI	CCCE	CTS	CCDR	FDR	TOTAL
1975/76	--	13,600	--	--	--	168,060	--	--	655,200	--	836,860
1976/77	28,400	5,369,950	--	--	2,353,794	48,250	--	--	285,000	3,120	8,085,394
1977/78	5,734,610	20,842,020	69,890	8,855,700	3,593,520	2,255,370	--	900,000	511,740	410,850	42,765,880
1978/79	1,481,850	3,092,270	3,891,015	1,511,255	149,350	1,298,150	22,690	300,000	--	--	12,158,030
1979/80	821,102	4,742,930	7,428,470	209,800	559,655	1,888,270	3,842,614	1,380,000	--	--	20,872,614
Total	8,065,970	34,061,370	11,389,375	10,576,755	6,656,319	5,658,100	3,865,304	2,580,000	1,451,940	413,970	84,718,788
Percentage	9.5	40.2	13.4	12.5	7.9	6.7	4.6	3	1.7	.5	100

SOURCE: ORD Credit Accounts, 1980.

13.4 percent; UNDP/FENU for 12.5 percent and the ORD 9.5 percent; and the balance coming from six other agencies.

3.2 The Eastern ORD's Credit Program Administration

There are basically two kinds of loans in effect in the Eastern ORD: the short term loan and the medium term loan. Short term loans are provided on a yearly basis and with a 12-month repayment period. The medium term loan has a repayment period of four or five years. The typical medium term loan for a more or less complete animal traction package has a maximum term of four years for donkey equipment and five years for oxen drawn equipment. In both cases there is a one-year grace period but the peasants may start repayment the first year if they choose to do so. All ORD credit is provided in kind except, until recently, the purchase of draft animals. Credit provided for short term and medium term loans is shown in Table 4-2 for the 1975-80 period. The short term loans for 1976-77 and 1978-79 include loans for cereal banks, the amount of which were 1,905,886 and 4,852,100 CFA for the two years, respectively. The number and amount of medium term loans for both donkey and oxen traction are shown in Table 4-3.

The administration of credit activities is complex because various bureaus and/or sections and sub-sections, sector chiefs, sub-sector chiefs and extension/credit agents are directly or indirectly involved in the provision and collection of loans. For example, the role of the Bureau of Agricultural Production (BAP) is responsible for collecting orders for traction equipment and draft animals as requested by sector chiefs. The BAP is also responsible

TABLE 4-2

Number and Value of Short Term and Medium Term Loans
in the Eastern ORD, 1975-1980

Year	Short Term		Medium Term		Total	
	Number of Loans	Amount Loaned (CFA)	Number of Loans	Amount Loaned (CFA)	Number of Loans	Amount Loaned (CFA)
1975-76	0	0	20	836,860	20	836,860
1976-77	11	28,400	128	8,056,994	139	8,085,394
1977-78	1,566	7,041,070	591	35,724,900	2,157	42,765,970
1978-79	332	2,646,905	183	9,511,125	515	12,158,030
1979-80	746	6,495,134	258	14,377,480	1,004	20,872,614
Total	2,655	16,213,069	1,180	68,507,359	3,835	84,720,428

SOURCE: Eastern ORD Credit Accounts, 1980.

TABLE 4-3

Number and Value of Loans for Oxen and Donkey Traction
in the Eastern ORD, 1975-1980

Year	Oxen Traction		Donkey Traction		Total	
	Number of Loans	Value of Loans (CFA)	Number of Loans	Value of Loans (CFA)	Number of Loans	Value of Loans (CFA)
1975-76	20	836,860	0	0	20	836,860
1976-77	116	7,685,744	12	371,250	128	8,056,994
1977-78	389	30,339,675	202	5,385,225	591	35,724,900
1978-79	86	7,125,695	97	2,385,430	183	9,511,125
1979-80	106	9,705,995	152	4,671,485	258	14,377,480
Total	717	55,693,969	463	12,813,390	1,180	68,507,359

SOURCE: Eastern ORD Credit Accounts, 1980.

for distributing inputs and other equipment, the training of draft animals as well as providing technical assistance on animal feeding and care. The Bureau of Livestock and Veterinary Services (BLV) provides animal health care services. The Credit and Cooperatives Sub-Section (CCS-S) in the Bureau of Community Development (BCD) is responsible for the approval, disbursement and collection of loans. Extension agents, with the support of BAP, provide technical training to farmers so that they can properly use the new technology. It is easy to see how these various groups can influence the efficiency of the credit system.

3.3 Criteria for Selection of Borrowers

Credit is distributed to farmers according to the following guidelines: first, credit is distributed only through farmers' organizations such as village groups and/or village cooperatives. The village organization screens and endorses the application of individual farmers seeking credit. Individual farmers are required to pay a group membership fee. The membership fee payments are kept by the ORD in a separate account to repay arrears. The annual membership fee costs 200 CFA for a short term loan. The medium term fee costs 500 CFA and is valid for five years.

The second condition is that no member of any farmers' organization is eligible for a loan if the arrears of his village group or cooperative exceed 10 percent for the preceding year. This restriction may be waived by the lending institution in cases of unusual circumstances such as a natural disaster (e.g. drought), death or if the ORD failed to deliver the inputs or equipment on time.

The third condition requires the loan applicant to make a down payment of at least 10 percent of the total medium term loan. The fourth condition requires that each potential borrower commit himself to plant at least one-third of his acreage to cash crops. In addition, those farmers who benefit from the animal credit program are required to subscribe to an animal insurance policy which is pre-paid as part of the total credit package. The fifth criterion for eligibility for a medium term credit is an assessment of the profitability of the farm business and how much credit the farm is able to bear.

There is no collateral required in the ORD credit program. Since land is collectively owned and access to land is governed by traditional rules, it cannot be used as an effective collateral. There is virtually no market for agricultural land in rural Upper Volta. As a substitute for the lack of collateral, the ORD has devised material and non-material ways to cover cases of default.[1] The material means comprise the following: (1) village membership fees; (2) insurance premiums; (3) subscriptions of cooperative members; (4) repossession of equipment and draft animals; and (5) the profitability of the farmer's operation which is viewed as a supplementary guarantee. The non-material means are: (1) number of years of experience of the farmer; and (2) peer group and social pressure on delinquent farmers.

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[1]Unlike plows and carts which depreciate over time, oxen gain in weight and increase in value.

3.4 Procedures of Credit Provision

The procedures involved in extending both short and medium term credit to farmers involves a bottom-up and top-down process. The bottom-up process starts when potential short term credit candidates get their inputs. Extension agents have two sets of forms to fill out. First, each applicant fills out the individual short term credit form (ISTCF) in four copies and supplies the following information:

1. number of the borrower which is the number on the village group membership card;
2. unit credit price of the various inputs;
3. down payment;
4. balance due; and
5. the date of input delivery.

The four copies are sent to different destinations. The white, pink, and yellow copies are sent to the sub-sector chief. The fourth copy remains with the borrower. The second form which the credit agent fills out consists of a summary statement of all credit transactions by borrower number and by village. This statement is sent to the sub-sector chief along with the three copies of individual short-term credit forms.

At the sub-sector level the same kind of paper work is performed. The sub-sector chief fills out a summary statement form by extension unit and keeps the yellow copies of the individual short-term credit forms. At the sector level, the sector chief basically goes through the same process. At the end of this procedure, the credit office at headquarters holds three separate sets of summary

statements (by village, by extension unit and by sub-sector) and a number of pink ISTCFs corresponding to the number of borrowers. One can visualize the large amount of paper work involved in these procedures.

The paper work for repayment involves: (1) a top-down movement of the white copies of ISTCFs; and (2) a bottom-up movement of both the green copies of ISTCFs and the loan repayment money. The first movement involves sending the white ISTCFs to the extension/credit agents. When a farmer repays his loan, the extension/credit agent returns the white copy of the ISTCF and a receipt to the farmer. The extension/credit agent transmits the green ISTCFs and repayment funds to the sector chief through the sub-sector chief. Summary statements of repayments are prepared following the same procedural steps as was explained earlier. The sector chiefs prepare several loan repayment statements which are handed over to the ORD cashier along with repayment funds. One summary statement of repayment is sent to the Credit Office for control. The Credit Office prepares a monthly short term credit situation for both loans and repayment received.

The paper work involved in providing medium term loans is about the same as that of the short term credit. Each year at the end of November sector chiefs are required to present to the Director a global order of all traction material and equipment needed to meet the demand of their farmers for the coming growing season. For each farmer who is eligible for medium term credit the credit agent prepares an "individual medium term credit card" (IMTCC). The information on this card includes:

1. the source of the loan;

2. the date of delivery of the credit items;

3. the number of the farmer and the number of his village;

4. description of the items being purchased;

5. amount of the installments and their due dates;

6. the total amount of the loan, including interest payments;

7. the down payment, if any; and

8. the signatures of both the President of the village group or the village chief[1] and the credit agent.

The oxen loan package is repaid in a five-year period with one year grace, three equal installments of 20 percent and a final payment of 40 percent of the total loan. The loan for the donkey package is for four years with a one-year grace period and equal repayments over years two, three and four. Both oxen and donkey loans charge 5.5 percent interest. All repayment figures are given in a credit manual[2] issued by the Ministry of Rural Development and used by credit agents to fill out the various documents described above.

As part of the medium term credit package, beneficiary farmers who plan to buy animals with their loan are required to subscribe to an animal insurance policy. The insurance premium payment amounts to 750 CFA a year for one donkey and 3,000 CFA a year for a pair of oxen. The animal insurance coverage is available for farmers who

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[1]For illiterate presidents of village groups or village chiefs fingerprints are used as substitute for signatures.

[2]This document is: ORD de l'Est, Fiche Technique sur le Credit Rural, March 1979.

already possess animals but a veterinarian has to examine the animals before insurance is effective.

A repayment of an installment may be postponed under a number of unusual circumstances:

1. lack of extension services;
2. bad harvest due to drought and floods;
3. inputs not delivered or not delivered on time;
4. animals not trained; and
5. severe sickness of borrower.

Foreclosures of both equipment and/or draft animals may occur if it is verified that a borrower has no valid reason to evade his credit obligations. Repossession of items purchased on credit does not happen very often in spite of high delinquency rates. The reason is probably due to fear, on the part of the ORD, to jeopardize the credit program as foreclosure is perceived to be counterproductive. The extent to which such a cautious policy of non-enforcement of foreclosures is warranted remains an empirical question. It is important to get some information about how traditional credit systems deal with default and delinquency. If foreclosures are found to be socially acceptable practices in informal credit systems, perhaps the ORD could move more aggressively in enforcing foreclosures.

4. Summary

This chapter has provided an overview of Upper Volta's experience with agricultural credit over the last fifty years. Early attempts to establish credit programs in the colonial era failed for

several reasons, including, operational and managerial problems, misunderstanding of local socio-economic arrangements (e.g., collective ownership of land) and high delinquency and default rates.

Numerous credit programs were set up after Upper Volta achieved its independence in 1960, the most important of which was SATEC's credit program. Although SATEC's credit for increasing food crop production appeared promising in the early years, its financial viability rapidly eroded in subsequent years and the program collapsed. Causes of the failure of SATEC's credit program included the lack of educational and training components in the village credit cooperatives, the lack of cash crops and ill-timed dates for collection of repayment, etc.

From the mid-1960's to the early 1970's, the National Development Bank, was entrusted with agricultural credit responsibilities in collaboration with the ORDs. But, relationships between the Bank and the ORDs became strained and it appeared that the Bank perceived its agricultural credit operations to be a burden imposed upon it by the government. In any event, the NDB phased out its agricultural lending activities, although it continued to provide loans directly to the ORDs for this purpose.

One of a few apparently successful agricultural credit stories in the mid-1970's was the Matourkou credit program for six villages in Western Upper Volta. This credit program was a part of the built-in extension component of the Matourkou training center for extension agents which was jointly funded by UNDP and the government of Upper Volta. The credit program involved a land settlement scheme, provided both short term loans for seasonal inputs and medium term

loans for animal traction and was geared at promoting both cash and food crops. Although reports of the project director claim that the project has been successful, a word of caution is in order because of several features which are unique to the Matourkou credit program. These unique features include a strict supervision by highly motivated extension/credit agents, a reliable year-round feeder road infrastructure, availability of local market outlets, and an effective farmer training component. The performance of the Matourkou credit program should be carefully studied, including its technical, financial and economic impact at the farm level and the overall costs of the project. The Matourkou experiment may be useful to other lending institutions in other regions of the country.

The EORD's current credit program provides both short and medium term loans in kind to farmers to acquire seasonal inputs, draft animals and equipment for donkey and oxen traction. The credit program focuses on food crop production. Funds for the credit program are partly provided by internal sources but the most substantial part (about 90 percent) comes from various external donors of which USAID is the most important contributor (about 42 percent).

The administration of the credit program is supported by various bureaus, divisions and subdivisions at headquarters in collaboration with field extension/credit agents scattered around the region in a highly hierarchical network. Credit is provided to individual farmers through village organizations (village groups or cooperatives). Potential borrowers have to meet a number of criteria in order to obtain loans, including the payment of a village organization membership fee, draft animal insurance and devoting at least

one-third of total acreage to cash crops. In addition, the ORD is supposed to carry out an economic evaluation of farmers' crop and livestock enterprises to appraise their debt carrying capacity.

Both provision of credit and collection of repayment involve fairly complex procedures, including a top-down bottom-up movement of orders and delivery of various credit items, papers and funds. These complicated procedures and paper work coupled with unclear delineation of responsibilities among different bureaus at headquarters and in the field have often given rise to a number of difficulties in implementing the EORD credit delivery system. These problems will be identified and analyzed in the next chapter.

CHAPTER V

ANALYSIS OF THE PERFORMANCE OF THE EASTERN ORD CREDIT SYSTEM

The purpose of this chapter is to analyze the overall performance of the Eastern ORD credit system in terms of the effectiveness in providing both short and medium term credit and in the achievement of the ultimate objectives of increasing crop production and incomes.

1. Defining Performance Criteria

The literature review has pointed out that the overriding role of a credit system is the mobilization and the transfer of resources across economic sectors, regions and income classes of a given country in order to bring about an efficient allocation of those scarce resources. This role assumes that there is a lack of financial resources at the farm level that makes it difficult for many farmers to take advantage of new technologies. The performance of a credit institution can be evaluated by appraising (1) the effectiveness in mobilizing loanable funds, (2) the efficiency of disbursing these funds to farmers at a minimum cost and on a timely basis, and (3) the efficiency in collecting repayments.

A second level of performance evaluation is the degree of achievement of the credit objectives such as increase farm income, expand food production and improve equity. The production/income

objective is achieved if it can be empirically proven that farmers who participated in the credit program are better off than before and/or better off than non-borrowers. The equity objective takes up the issue of "who is benefiting from the credit program." Is it the rich/large farmer or the poor/small farmer?

Before we define the criteria for measuring the performance of the EORD's credit system we should keep in mind that the ORD is different from the usual agricultural credit organization. First, 90 percent of the credit funds of the Eastern ORD are financed by external sources. Hence, the ORD does not assume the important function of mobilizing resources from other sectors of the economy of Upper Volta. Second, the credit program is only a small part of the activities of the ORD. As a result it is extremely difficult to estimate how much of the total administrative cost of the ORD should be attributed to the credit section. Third, credit is not provided in cash but in kind. Loans are tied to production inputs and animal traction implements. Finally, the ORD is virtually the only supplier of these production inputs.

Because the features of the ORD as a credit institution are rather unique, the analysis of the performance of the Eastern ORD will be based on the following criteria: First, an attempt will be made to assess the organizational and operational efficiency of the ORD in processing loan applications and in distributing inputs to farmers on a timely basis. This would be achieved by examining (1) the degree of coordination of various ORD services involved in the processing of loan applications and delivery of productive inputs to farmers; (2) the ORD real cost of lending, i.e., the cost per loan

outstanding and the cost per 100 CFA of loan outstanding; (3) the real cost of credit to farmers participating in the credit program, i.e., the nominal interest rate, various fees, gifts and bribes to credit agents, if any, cost of traveling and number of visits required to get a loan; and (4) the performance of extension/credit agents.

A second criterion of performance that will be addressed is repayment rates. A number of indicators will be used to appraise the repayment performance of the lending institution, including:

1. the collection ratio, that is, comparing the volume of loan collections with the volume of amounts due (computed on a yearly basis for the last four years);

2. the percentage of the portfolio in arrears. This ratio compares the size of the total portfolio with that portion of the portfolio which is in arrears at a given time; and

3. the proportion of borrowers meeting repayment obligations --a comparison between the number of borrowers who have loans falling due and the number of borrowers who actually repay their loans.

A third criterion of ORD credit performance is the degree of farmers' understanding of the credit program. Given the fact that the majority of borrowers are illiterate, it is crucial to evaluate the level of their understanding of the objectives of the credit program as well as the various conditions such as credit costs and terms of repayment.

A fourth criterion is the degree of farmers' perceptions of the advantages and disadvantages of the ORD credit program in order

to determine the kind of variables which affect the participation or non-participation of farmers in the program.

A fifth criterion is the impact of credit on production and income of farmers. We shall determine whether output per hectare and/or output per "actif" is higher for credit users than for non-credit users. We shall also examine whether income per hectare and/or income per "actif" is higher for borrowers than for non-borrowers.

Finally, the equity issue will be addressed. Income/wealth proxies will be used to compare users and non-users of animal traction. These income/wealth proxies include (1) average revenue generated from non-farm activities--especially the trading of animals, (2) trading of agricultural and non-agricultural products that are not produced by the households, and (3) number of durable consumer goods.

2. Organizational and Operational Efficiency in the Eastern ORD Credit System

2.1 Efficiency in Coordinating Various ORD Services

As was described earlier in Chapter IV, a number of bureaus, sections and sub-sections at the headquarters level are involved in the ORD's credit program. To investigate the efficiency of the ORD medium term credit delivery system, a one-shot questionnaire was administered to 128[1] animal traction farmers (ANTRAC) in 1978-79.

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[1]Of these 125 ANTRAC farmers two did not participate in this particular survey which brings the total of ANTRAC farmers to 123. Furthermore, as this sub-sample was purposively selected to include the best ANTRAC farmers regardless of whether or not they obtained

Farmers were asked whether they used their traction package the first year. Table 5-1 shows that, of the 94 who receive credit from the ORD, 57 used their equipment the first year, 33 did not and four did not answer the question.

The reasons why the 33 farmers did not use their equipment the first year include:

1. material was not delivered on time (34.4%);
2. animals not trained (28.1%);
3. animals were too young (12.5%);
4. equipment was incomplete (6.3%); and
5. animals were not delivered on time (3.1%).

In summary, a relatively large number of farmers with medium term credit did not use the ANTRAC package the first year due to the inefficiency and lack of coordination leading to untimely delivery of both traction equipment and draft animals. The poor performance of the extension service is apparent when we note that a large number of farmers were not able to use their equipment because the animals were either too young or not trained. Compounding the problem of coordination among the various bureaus working directly or indirectly with the ORD credit office, is the lack of a detailed program of work at all levels. There is no precise schedule of the various tasks which have to be performed by various services at the headquarters

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their equipment on credit, it turned out that 31 farmers did purchase their material with cash while 92 obtained theirs through the ORD credit program.

Also, in the Pièla region, five ANTRAC farmers from the village of Dabesma were selected in the random sample. Of these five, three bought their equipment with cash, and two used medium term credit. Hence, the final number of ANTRAC users who participated in this special survey was 128, of which 94 received credit and 34 did not.

TABLE 5-1

Eastern ORD: Reasons Why 32 Farmers Did Not Use Animal Traction Equipment During the First Year

Reasons	Numbers of Farmers	Percentage
Equipment not delivered on time	11	34.4
Animals not trained	9	28.1
Animals too young	4	12.5
Incomplete equipment	2	6.3
Animals not delivered on time	1	3.1
Other reasons	5	15.6
Total	32	100.0

SOURCE: Farm Survey Data, 1978-79.

and by extension workers at the sector level. There were at best, vague guidelines indicating that lending activities would take place from January to September with no clear deadline set for orders of needed equipment.

The training of both draft animals and farmers has always been a serious problem in the ORD animal traction program. Extension/credit agents are often tied up with paper work and there is often not enough time to teach farmers how to use their equipment. To solve this problem the ORD has been compelled to hire a number of very knowledgeable farmers known as Bouviers to provide training to other farmers. Since the Bouviers need to be transported from one village to the next, the Bureau of Agricultural Production (BAP) is supposed to establish a training schedule in collaboration with the sectors. But, the organization and the coordination of these training sessions have left a lot to be desired. For example, the Bouvier may arrive in the village and find that the farmers did not have any advance notice, or, alternatively, the Bouvier does not show up. The latter case is commonplace because there is not a clear understanding as to who (the BAP or the sector) should provide transportation. Obviously, farmers who cannot use their young animals, the first year, incur a number of costs such as feeding, veterinary care and insurance costs, while no benefit is derived.

Another problem that adds to the organizational and operational deficiencies of the credit system is the place of the credit office in the ORD organizational structure. So long as credit activities were limited in scope (number of farmers reached) and in resources,

there was no need to set up a separate credit bureau. But, with the expansion of loan operations over the last four years, maintaining this office as a sub-section within the Bureau of Community Development is questionable because this further complicates procedures as two steps separate the current credit office from the director.

2.2 The ORD Real Cost of Lending

Although most of the ORD's credit funds are derived from external aid, it is still theoretically desirable to examine the ORD's real cost of lending. The real cost of lending of a credit institution may be broadly defined as the sum of all costs which are to be incurred in order to loan funds to borrowers. In the special case of the ORD, where inputs, instead of actual cash loans, are provided to borrowers, this definition encompasses other costs such as transportation of productive factors from the ORD to the farmers.

Theoretically, the real cost of lending can be assessed by two indicators: (1) the cost per 100 CFA of loan outstanding; and (2) the cost per unit of loan. The total real cost of lending (TRCL), on a yearly basis, would include the following:

1. salaries of all personnel (PS) involved in the credit provision activities (including overheads and bonuses);

2. depreciation of buildings, vehicles and other equipment (DP);

3. annual operating costs (OC) such as office supplies, maintenance and repairs of various machinery, vehicles and equipment, and utility charges;

4. interest costs (IR) of credit funds; and

5. losses due to write offs of bad debts (LWO).

Thus, the total real cost of lending may be expressed as follows:

$$TRCL = PS + DP + OC + IR + LWO \quad (1)$$

In equation (1), DP (depreciation allowance) may be replaced by the rental value (RV) of all durable assets cited above. Hence, the above relation becomes:

$$TRCL = PS + RV + OC + IR + LWO \quad (2)$$

The first indicator of the real cost of lending may be expressed, for a given period, as already stated, as a percentage of the total loans outstanding (TL). That is,

$$RCR_j = \frac{TRCL_j}{TL_j} \times 100 = \frac{PS_j + RV_j + OC_j + IR_j + LWO_j}{TL_j} \times 100 \quad (3)$$

where: RCR is the real cost rate and j stands for period j.

Equation (3) above shows that RCR varies directly with TRCL and inversely with TL. For a given TRCL, as the TL grows, RCR would be lower. This situation may be encountered in a newly established credit institution where all the structures are established and loan operations are growing. On the other hand, the RCR would increase if the TRCL grows for a given level of TL. Such a situation occurs in cases where the total loan value is small or does not substantially grow, while the institution is expanding. The rate of growth of RCR would be positive if the TRCL grows at a faster rate than that of TL. In the first years of operation, the total real cost of lending of a credit institution relative to total value of loans outstanding would be expected to be high because the value of loans

is small in earlier years while the institution has to incur a number of fixed costs such as rental value of fixed assets (buildings and various machinery, equipment, etc.).

Operating costs, however, (i.e., processing loan applications, salaries, office supplies, transportation costs of getting inputs to farmers, especially in the case of the Eastern ORD) depend more on the number of loans than their value, because processing a small loan requires, basically, the same amount of paper work and other variable costs as a large one. This is one of the major reasons why the administration costs of a credit program may increase with a large number of small loans. Furthermore, this also explains to some extent, why credit institutions may not be enthusiastic in lending small amounts to a large number of small borrowers.

The second indicator in assessing the real cost of the lending institution, as mentioned earlier, is the cost per unit of loan. In a given period of time (generally a year), the per unit loan cost would be equal to the total real cost of lending (TRCL) divided by the number of loans processed. That is, if N is the number of loans, the per unit cost (C_{ul}) would be:

$$C_{ul_j} = \frac{TRCL_j}{N_j} \tag{4}$$

where j stands for period j. Substituting TRCL for its components would yield the following:

$$C_{ul_j} = \frac{PS_j + RV_j + OC_j + LWO_j + IR_j}{N_j} \tag{5}$$

Equation (5) shows that C_{ul_j} is likely to be higher in the early years of operation because of the smaller number of loans. In subsequent years, as the number of loans grow, the C_{ul_j} would be reduced.

$$C_{ul_j} = \frac{PS_j}{N_j} + \frac{RV_j}{N_j} + \frac{OC_j}{N_j} + \frac{LWO}{N_j} + \frac{IR_j}{N_j} \qquad (6)$$

As N_j increases $\frac{RV_j}{N_j}$ will decrease; $\frac{PS_j}{N_j}$ will also decrease especially if most of the personnel were already in place. However, $\frac{OC_j}{N_j}$ and $\frac{LWO_j}{N_j}$ may move either way depending on how large and how fast OC and LWO grow relative to the increase in N. It should be recalled that OC is directly a function of N. There is also a relation between LWO and N as losses due to default are likely to increase with the increase in the number of loans.

In both ways of looking at the real cost of lending, two other factors should be taken into consideration. These are the opportunity cost of loanable funds and inflation. The opportunity cost to the lending institution is the highest return foregone in the best available alternative investment. Inflation which erodes the value of loan repayment money is a variable that can hardly be overlooked.

A credit institution would be more efficient than another, if its lending cost per 100 CFA of loan outstanding is lower and/or its lending cost per loan is lower. For a given credit institution, a time trend of these two indicators may provide an indication of the efficiency of its lending operation. Obviously such an

evaluation may not do justice to other considerations deemed desirable by policy-makers. For example, a deliberate attempt to reach small and/or poor farmers is likely to be more costly (i.e., less efficiency). Efficiency is but one objective and may run counter to other objectives.

Turning to the Eastern ORD credit system, the two lending cost indicators may help explain the real cost of its lending activities. However, in the context of the EORD, where a whole range of activities is carried out by the institution drawing on the same resource base, it is very difficult to allocate costs among various operations. Given the fact that the ORD has a global bookkeeping system, there is no way of isolating the administrative costs of its credit program. To obtain cost figures for the credit program alone, one has to subjectively allocate a portion of the ORD total operating costs to this program.

Data on depreciation of buildings, vehicles and equipment are not available. Even if such data were available it would be difficult to estimate how much should be attributed to the credit program. Moreover, the EORD does not pay interests on credit funds since most of credit financial sources consist of grants from various external donors.

Losses associated with write offs of bad debt and default are not explicitly documented in the EORD credit accounts. Loans long overdue which should have been written off are still classified as arrears even though the probability for collection is extremely low. This is standard practice in all ORD's credit bookkeeping because

only the government can write off farmers' debts with public lending institutions.

Thus, only operating costs associated with the credit component are considered in estimating the cost of the EORD's lending activities. Although such estimate will be conservative, it will nonetheless provide an indication as to the magnitude of the EORD's real cost of lending. The EORD director and the MSU credit specialist estimate that the credit program accounts for about 10 percent of the ORD annual operating expenses. They also estimate that field extension/credit agents devote 10 percent of their time to credit activities. In addition, there are three full-time credit agents working at headquarters.

The only data available on the ORD budget pertain to the 1977-80 period. Table 5-2 shows that external funds constitute the most important part of the EORD's budget. External funds accounted for 70.2 percent in 1977-78; 56.8 percent in 1978-79 and 85.1 percent in 1979-80. Table 5-3 shows the distribution of the ORD's budget by expenditure category. Personnel expenses constitute the major single item in the operating expenses. Annual salaries of extension/credit agents are given on Table 5-3 for the three years involved in this exercise. The eight sector chiefs received a monthly salary of no less than 40,000 CFA each; and the 24 sub-sector chiefs and the three credit employees at headquarters received about 30,000 CFA monthly.

Annual total cost of the EORD's credit program will be estimated to be equal to 10 percent of EORD's total annual vehicle operating expenses and general operating expenses as shown in Table 5-3. In addition, 10 percent of field agents' salaries (extension/

TABLE 5-2

The Eastern ORD Budget by Source of Funding, 1977-1980
(in CFA)

	Internal Funding		External Funding								
	Government	EORD	USAID	AFDI	CCCE	CTS	UNDP/FAO	FDR	FED	FENU	TOTAL
1977/78	122,505,000	18,000,000	186,677,209	--	--	--	10,050,000	24,434,762	2,000,000	47,135,000	410,801,971
Percentage	29.8	4.4	45.5	--	--	--	2.4	5.9	.5	11.5	100
1978/79	170,323,000	--	84,947,000	42,000,000	--	9,842,000	38,108,000	16,875,000	5,319,000	26,832,000	394,246,000
Percentage	43.2	--	21.5	10.7	--	2.5	9.7	4.3	1.3	6.8	100
1979/80	39,000,000	20,447,663	74,036,806	90,160,000	354,280,160[a]	54,100,000	83,071,000	52,733,712	11,488,400	17,890,000	797,207,741[a]
Percentage	4.9	2.6	9.3	11.3	44.4	6.8	10.4	6.6	1.4	2.3	100

SOURCE: ORD de l'Est, Budget 1977; Projet de Budget 1978; Projet de Budget de l'Exercice 79-80.

[a]The 1979-80 Budget is unusually high due to the intervention of CCCE in the financing of a cotton project.

TABLE 5-3

The Eastern ORD Budget from 1977 to 1980
(in CFA)

	1977-78	1978-79	1979-80
Total Budget	410,801,971	394,246,936	797,207,741[a]
I. Investments	234,697,039	149,457,000	489,036,000
of which			
1. Buildings	135,587,039	89,916,000	318,750,000
2. Vehicles & tractors	52,800,000	--	--
3. Equipment	46,310,000	59,541,000	170,286,000
II. Operating Expenses	176,104,932	226,119,936	195,688,341
of which			
1. Vehicle operating expenses	42,175,000	54,518,000	22,889,119
2. General operating expenses	27,280,000	32,979,400	28,482,160
3. Personnel expenses	106,649,932	138,622,536	144,317,062
of which			
Extension/Credit Agents	66,326,057	83,201,610	78,627,652
Others	--	18,670,000	--

SOURCE: Same as Table 5-2.

[a]This figure includes funds for credit and other expenses for 112,482,700 CFA.

credit agents, sector and sub-sector chiefs), and the total salaries of the three full-time credit employees at headquarters are attributed to the credit program.

To appraise the cost of lending over time, the total cost of lending will be expressed as a percentage of total loan portfolio outstanding. That is, the total cost of operating the credit program relative to the overall total credit money which is in the hands of farmers at the end of a given year. Total loan portfolio outstanding include not only loans extended during that particular year but also arrears and loans of previous years which are not matured yet. This approach is more realistic than just considering loans distributed during the year because current costs are also related to previous loans. Current costs of collecting repayments, updating records and books, foreclosure procedures and credit agents' visits to farmers for credit-related matters, are directly related to lending transactions that took place in both the current year and in preceding years. Theoretical considerations developed earlier regarding the variations of lending cost with respect to total loan value apply. But, total loan value (TL) instead of representing only total loans for the year under consideration would represent the total loans outstanding.

Table 5-4 shows the lending cost per 100 CFA of total loan portfolio outstanding for the three-year period of 1977-80. The estimated lending cost rates are 27.5 percent for 1977-78, 30.0 percent for 1978-79 and 19.2 percent for 1979-80. The average annual lending cost rate is about 25 percent over the three-year period.

TABLE 5-4

Eastern ORD Estimated Lending Cost Per 100 CFA of Total Loan Portfolio Outstanding, 1977-1980

	Total Loan Portfolio Outstanding (Short and Medium Term) (in CFA)	Total Estimated Lending Cost (in CFA)	Lending Cost per 100 CFA Outstanding (in CFA)
Situation A[a]			
1977/78	57,653,176	8,952,605	15.5
1978/79	64,578,887	10,640,161	16.5
1979/80	79,803,740	10,182,765	12.7
Situation B[b]			
1977/78	57,653,176	15,898,105	27.6
1978/79	64,578,887	19,389,901	30.0
1979/80	79,803,740	15,319,892	19.2

SOURCE: ORD Credit Accounts, 1980 and ORD Budget 1977-78, 1978-79 and 1979-80.

[a]Situation A: Total lending costs estimated at 10 percent of field agents salaries only, plus headquarters credit staff full salaries.

[b]Situation B: Total lending costs estimated at 10 percent of field agents salaries, 10 percent of vehicles operating expenses, 10 percent of general operating expenses and headquarters credit staff full salaries.

If the lending cost were estimated at 10 percent of field agent salaries only, plus the full salaries of headquarters credit staff, Table 5-4 shows that the annual lending cost rate would be 15.5 percent for 1977-78, 16.5 percent for 1978-79 and 12.7 percent for 1979-80.

As was mentioned earlier, another criterion for assessing the EORD cost of lending is the cost per unit of loans outstanding. Table 5-5 shows that cost per loan outstanding is estimated at about 7,000 CFA for 1977-78. The cost per loan more than doubled in 1978-79 and dropped to around 8,000 CFA in 1979-80.

In conclusion, it appears that, even by using the conservative estimate of 10 percent of the EORD's operating costs for the credit program, the real lending cost is high. The average lending cost rate is estimated at 25 percent a year over the 1977-80 period. Since the nominal interest rate charged by the EORD is 5.5 percent, the level of subsidy is about 20 percent. The major cause for the high real cost of lending is associated with high transportation costs of delivering the animal traction equipment and other inputs to farmers in remote areas.

The rationale for maintaining the 5.5 percent nominal interest when inflation is 12-13 percent per year is the belief that farmers are so poor that concessionary loans are necessary to induce them to participate in the credit program. The extent to which this hypothesis is borne out by empirical evidence will be examined later in this chapter. Clearly, there is a need for taking appropriate steps to bring the cost of lending more in line with the ORD resource base and to increase nominal interest rates. The long range objective of

TABLE 5-5

Eastern ORD Estimated Lending Cost Per Unit of Loans Outstanding, 1977-1980

	Total Number of Loans Outstanding[a]	Estimated Total Cost of Lending (CFA)	Cost per Unit of Loans Outstanding (CFA)
1977-78	2285	15,898,105	6,958
1978-79	1106	19,389,901	17,532
1979-80	1906	15,319,892	8,037

SOURCE: EORD Credit Accounts, 1980.

[a]Total number of loans = number of medium term loans outstanding + number of short term loans provided during the year under consideration.

developing a self-sustaining credit institution will remain an elusive goal unless these steps are taken. The National Credit Institution is considering setting interest rates at 11 percent. This is a first step in the right direction.

2.3 The Farmers' Real Cost of Borrowing

A farmer's decision to participate in a credit program partially depends on the perceived costs associated with such a participation. To think that the nominal interest rate charged on loans as being the only determinant in farmers' decisions would overlook a number of other important influencing variables. A number of studies has shown that small farmers have not always been as responsive to concessional credit as expected. For example, in certain instances where formal credit institutions have charged low interest rates, the response of farmers has been fairly low. Further, it has been substantiated that some farmers borrow from informal lenders at higher rates.

The foregoing facts have led Adams [1977a] and a number of other researchers to hypothesize that the nominal interest rate is not the overriding factor in farmers' decisions to borrow, but rather the real cost of borrowing, including a number of hidden costs. The real cost of borrowing (RCB) may be defined as all costs, both explicit and implicit, which the borrower incurs before actually obtaining a loan. The RCB would include, in addition to the nominal interest rate (NIR), what Adams [1977a] has termed "Transaction Costs" (TC). The transaction costs would include all non-interest payments such as service fees, closing costs, payments of interest in advance,

purchase of other lender services, compensatory balances, transportation costs to visit the lending institution, time lost in traveling, red tape, frustration, etc. The costs of red tape and frustration, although not directly translatable into a dollar figure, may actually turn out to be key factors in the behavior of farmers, especially when they are illiterate, hence, suspicious of complicated paper work procedures which they barely understand, if at all.

Some researchers have also argued, that transaction costs and the opportunity cost associated with the time consuming process of obtaining a loan constitute the most important portion of the total real cost of borrowing. Adams asserts that the trips back and forth to get a loan approved, or for repayments, may be very costly, especially for small seasonal and/or new borrowers.

Expressed mathematically the real cost of borrowing would be:

$$RCB = TC + NIR \tag{1}$$

where:

RCB = real cost of borrowing

TC = transaction costs

NIR = nominal interest rate

If L is the value of the seasonal loan taken, the real cost rate of borrowing on an annual basis would be:

$$RCRB = \frac{RCB}{L} \times \frac{12}{\text{Period of loan in months}} \times 100; \text{ or} \tag{2}$$

$$RCRB = \frac{TC + NIR}{L} \times \frac{12}{\text{Period of loan in months}} \times 100 \tag{3}$$

where:

RCRB = real cost rate of borrowing

L = value of loan taken

In the Eastern ORD the opportunity cost of time spent for a loan applications, travel cash expenses and gifts given to credit agents are a real cost to farmers. Of the 480 households, only 51 obtained short term credit. Of these 51, 43 also obtained medium term credit. Thus, it seems that there is a strong correlation between taking medium term credit and taking short term credit.

Table 5-6 shows that some farmers who obtained medium term credit had to travel up to 40 kilometers to get their loan processed. The same table shows that short term credit borrowers traveled up to 25 kilometers to apply for a loan.

The number of visits made by farmers to credit agents is shown in Table 5-7 for both medium term and short term credit borrowers. Whereas, nearly 48 percent of short term borrowers got their loan after one visit, only about 10 percent of medium term borrowers obtained theirs on their first visit. Further, the percentage of medium loan borrowers who obtained their loan after two to five visits is more than double (66.3 percent) that of short term borrowers (31.2 percent) after the same number of visits.

A conclusion that can be drawn at this point is that medium term borrowers spend relatively more time to get their loan processed as compared with short term borrowers. One would expect such a finding as more important sums of money are at stake in the medium term loans and they will be outstanding longer. Thus, 75 percent of all farmers getting medium term credit have visited the credit agent at least twice as compared with 40 percent for farmers getting short term credit. For those 43 borrowers who obtained both short and

TABLE 5-6

Eastern ORD: Distance Traveled by Farmers to the Residence of the Extension/Credit Agent

Distance (kilometers)	Medium Term Credit (94 Farmers)		Short Term Credit (51 Farmers)	
	Number of Farmers	Percentage	Number of Farmers	Percentage
0[a]	36	38.7	19	38.8
1-5	45	48.4	17	34.7
6-10	8	8.6	11	22.4
11-25	3	3.2	2	4.1
40	1	1.1	--	--
Total	93	100	49	100.0

SOURCE: Farm Survey Data, 1978-79.

[a]Farmers living in the same village as the credit agent (or visited by credit agent).

TABLE 5-7

Eastern ORD: Number of Visits by Farmers to the Residence of the Extension/Credit Agent

Number of Visits	Medium Term Credit (94 Farmers)		Short Term Credit (51 Farmers)	
	Number of Farmers	Percentage	Number of Farmers	Percentage
0[a]	14	15.2	6	12.5
1	9	9.8	23	47.9
2-5	61	66.3	15	31.2
6-10	5	5.4	2	4.2
11-15	3	3.3	1	2.1
35	--	--	1	2.1
Total	92	100	48	100.0

SOURCE: Farm Survey Data, 1978-79.

[a]Farmers living in the same village as the credit agent (or visited by credit agent).

medium term credit, time spent to negotiate loans is likely to be higher if they applied for both types of credit separately.

Cash expenses during trips to credit agent's residence are not very substantial. About 6 to 8 percent of both medium and short term borrowers have spent between 200 and 1,600 CFA during such trips. Bribes and gifts to credit agents do not seem to be widespread practices. The survey shows that only two short term credit farmers have given one chicken and two chickens, respectively, to the credit agent and one medium term credit borrower has given a chicken to the credit agent.[1] In addition to the foregoing costs, other real costs include village group membership fee which amounts to 200 CFA a year for a short term loan and 500 CFA for a medium term loan (for five years). Moreover, medium term borrowers who take draft animals on credit are required to pay insurance premiums: 750 CFA a year for a donkey and 3,000 CFA a year for a pair of oxen.

In addition to the costs already mentioned, the farmer who does not get his inputs, equipment or draft animals on time, bears an extra burden. When animals are too young, or not trained, or when inputs are delivered late or the equipment package is incomplete, the farmer is stuck with animals he has to feed and no extra revenue is generated from the use of the credit package.

In actual ORD lending practices farmers are provided short term credit for seasonal inputs with a nominal interest of 5.5

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[1] Depending on the region, a chicken costs from 300 to 450 CFA. In Fada prices are even higher, around 500 CFA and more.

percent per year.[1] Cash and credit prices for various inputs differ theoretically by the interest charged on items taken on credit. But, because credit prices are rounded upward, the actual interest rate is higher than the official nominal interest rate of 5.5 percent. For example, Table 5-8 shows that a farmer who obtains a short term loan for various inputs with a total cash value of 26,000 CFA and a total credit value of 28,000 CFA is actually charged a simple interest rate of 7.69 percent per year.

Another important point is that a number of farmers do repay their loans before twelve months. Farmers get their inputs in April or May. Although theoretically they have twelve months to pay back, a number of farmers actually do so at harvest, that is in October, November or December.[2] It turns out that the actual simple interest rate is higher than the nominal.

To assess the real cost of borrowing for a short term loan, the opportunity cost of time spent for acquiring the loan can be computed. The opportunity cost of travel time for a farmer who makes five round trips by bicycle at a distance of 25 kilometers can be figured out using net return to family labor in cropping enterprise. Net margin per worker equivalent hour has been estimated at 39.4 CFA for sorghum/millet [Lassiter, 1981]. Moreover, on the average, a 25 kilometer one-way trip by bicycle on a rural trail takes two hours.

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[1]Since farmers are required to repay both principal and interest in a single payment at the end of the year, it may be appropriate here to refer to the 5.5 percent interest as simple interest rate [Brake, 1966].

[2]In those ORDs where cotton is a major cash crop most farmers have to repay their loans after six, seven or eight months during the cotton marketing campaign which takes place between November and February.

TABLE 5-8

Calculation of Actual Interest Charges for a Short Term Loan

Short Term Credit Inputs	Quantity Needed (in Kg)	Cash Price (in CFA/kg)	Credit Price (in CFA/kg)	Total Cash Price (in CFA)	Total Credit Price (in CFA)	Interest Charges (in CFA)
Sorghum fertilizer	300	35	37	10,500	11,100	600
Sorghum seeds	18	125	150	2,250	2,700	450
Rice fertilizer	50	35	37	1,750	1,850	100
Rice seeds	50	110	120	5,500	6,000	500
Groundnut fertilizer	50	35	37	1,750	1,850	100
Groundnut seeds	50	85	90	4,250	4,500	250
Total				26,000	28,000	2,000

SOURCE: Cash and Credit Input Prices in: ORD de l'Est, Fiche Technique sur le Crédit Rural, 1979.

$$AIR_s = \frac{AIC}{Lt} \times 100$$

$$AIR_s = \frac{28,000 - 26,000}{26,000/year} \times 100 = 7.69\%/year$$

where: AIR_s = actual simple interest rate
AIC = actual interest charges
L = short term loan value
t = time

Another hour minimum is required to process a loan application. Hence, the opportunity cost of time spent on five trips would be about 1,000 CFA.[1] Another cost which should be taken into account in calculating the real cost of borrowing is the village organization membership fee, which amounts to 200 CFA for short term credit. Hence, total transaction costs (TC) would be 1,200 CFA for the time spent and the membership fee. Using equation (1) above and taking into account actual interest charges (not nominal interest charges) on the farmer's short term loan (2,000 CFA), the real cost of borrowing would be 3,200 CFA. Using equation (3) and substituting nominal interest charges (NIC) by actual interest charges (AIC), the real cost rate of borrowing (RCRB) would be 12.31 percent a year. Moreover, if the farmer repaid after six months, the real cost rate of borrowing would be 24.62 percent a year.

To sum up, farmers taking short term loans from the ORD, are in effect charged higher interest rates than the official nominal interest rate of 5.50 percent, because input credit prices are set at a level higher than that implied by the nominal interest rate. When actual interest charges are taken into account, Table 5-8 shows that the actual interest rate is 7.69 percent a year. In addition, if farmers repay before the 12-month period, as often occurs, actual interest rate is higher. In the above example, the farmer would actually pay 15.38 percent a year.

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[1]The opportunity cost of time spent for loan application is important during the growing season, especially in weeding period when labor requirement is at its peak.

Considering the opportunity cost of time spent to apply for loans and village membership fees results in a real cost rate of borrowing which may be as high as 12.31 percent a year. The real cost rate of borrowing is even higher in those cases where farmers repay before the end of the 12-month period. A repayment after six months, for example, would result in a real cost rate of borrowing as high as 24.62 percent, which is far higher than the nominal interest rate of 5.50 percent.

The same calculation may be performed for the real cost of borrowing of medium term credit borrowers who pay 500 CFA for village group membership fee. In addition, medium term credit farmers are required to pay insurance for draft animals (i.e., 750 CFA a year for a donkey and 3,000 CFA a year for a pair of oxen). Since animal traction loans involve substantial amounts of money which remain outstanding longer, loan applications are more time consuming as illustrated by the number of visits shown earlier.

In assessing farmers' real cost of borrowing, another variable which should be taken into account is that the overwhelming majority of farmers are illiterate, therefore suspicious of, and reluctant to subject themselves to the paper work required in loan applications. In fact, some farmers do not fully understand the intricacies of the credit program as will be substantiated later. In addition, it is not at all certain at this point, that farmers, especially food crop growers, are convinced of the profitability of the use of the so-called "modern" inputs. In conclusion, one might say that farmers' participation in the EORD's credit program is likely to be affected by the real cost of borrowing.

3. Repayment Performance and Related Issues

The literature review revealed that loan repayment is an important criterion in evaluating the performance of a credit program. High delinquency and/or high default rates can result in extremely high write offs, erode the financial base of the credit institution and ultimately lead to a slowdown in lending operations, and eventually, to bankruptcy. Although one may reasonably assume that a credit program has achieved its prime objective of increasing incomes when repayment is high, high loan repayments do not necessarily indicate that the loan has increased the income of the borrower. Borrowers may meet their debt obligations out of savings or proceeds from non-agricultural activities not financed by the loan (e.g. sales of animals, handicrafts, and other revenue from small scale industry). For example, Table 5-9 shows that 72.7 percent of the short term borrowers have sold crops to repay their loans, whereas 27.3 percent have sold animals. As for medium term loans, 70.2 percent of the farmers repaid their loans from crop sale proceeds and 13.4 percent sold animals to repay their loans. The remaining 16.4 percent used non-agricultural and other resources to meet their repayment obligations. Furthermore, even in those instances where credit has had a significant impact on production, farmers may still choose to repay loans out of other sources or means, instead of selling their crops for this purpose. Such a situation is conceivably possible especially in a subsistence agriculture setting where credit is primarily provided for food crop production. Despite all these problems, a high repayment rate,

TABLE 5-9

Eastern ORD: Items Sold by Farmers to Repay Short and Medium Term Loans[a]

Item Sold	Short Term		Medium Term		
	Number of Farmers	Percentage	Number of Farmers	Percentage	
Sorghum and Millet	--	--	5	7.5	
Cash Crops	--	--	8	11.9	70.2
Crops (not specified)	24	72.7	33	49.3	
Cash and Food Shops	--	--	1	1.5	
Sheep/Goats & Other Animals	9	27.3	2	3.0	
Cattle & Crops	--	--	7	10.4	13.4
Non-Agricultural Sources	--	--	2	3.0	
Other Sources	--	--	9	13.4	
Total	33	100	67	100.0	

SOURCE: Farm Survey Data, 1978-79.

[a]Of 33 and 67 farmers who have repaid their short and medium term loans respectively.

though not an end in itself, is still, along with other criteria, a valuable indicator of a credit system performance.

A number of repayment indicators may be used to assess the financial situation of a credit institution. Von Pischke [1977] suggests the following indicators: (1) the Collection Ratio, (2) the Percentage of the Portfolio in Arrears, (3) the Proportion of Borrowers Meeting Repayment Obligations, (4) the Aging of Arrears,[1] and (5) the Repayment Index.[1]

3.1 The Collection Ratio

The collection ratio indicator is simply the ratio of the volume of loan collection to the volume of amount due. It is a comparison between the value of installments falling due and actual volume of repayment. This ratio is conventionally computed for an accounting period (i.e., a month, a quarter or a year). Mathematically the collection ratio is expressed as follows:

$$G_n = \frac{\Sigma C_n}{\Sigma S_n}$$

where:

G_n = collection ratio for period n (expressed as a percentage)

ΣC_n = volume of repayments collected during period n

ΣS_n = volume of installments maturing in period n

Table 5-10 shows that the collection ratio for short term credit ranges from about 40 percent to 78 percent. The collection

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[1] Due to the way the ORD credit data were presented it was impossible to use these two indicators. But, because of their undeniable usefulness, a theoretical exploration of their possibilities and limitations will be presented in the appendix.

TABLE 5-10

Eastern ORD Credit Repayment Performance: Collection Ratio Indicators for 1976-1980

	1976/1977		1977/1978		1978/1979		1979/1980	
	ST[a]	MT[a]	ST	MT	ST	MT	ST	MT
Repayments: ΣC_{n_a} (CFA)	22,280	77,980	2,245,283	1,332,305	2,713,247	6,092,744	4,779,097	11,300,048
Installments due: ΣS_n (CFA)	28,400	206,190	5,507,424	2,336,430	5,981,463	14,027,340	12,144,347	24,584,431
Collection ratio:[b] $G_{n_a} = \Sigma C_{n_a}/\Sigma S_n$	78.4	37.8	40.7	57.0	45.3	43.4	39.3	46.0
Collection ratio:[c] $G_{n_e} = \Sigma C_{n_e}/\Sigma S_n$	78.4	37.8	40.7	54.2	37.3	34.0	31.8	21.5
Total Repayment: $\Sigma C_{n_{a_t}}$ (CFA)	100,260		3,577,588		8,805,991		16,079,145	
Total Amount due: ΣS_{n_t} (CFA)	234,590		7,843,854		20,008,803		36,728,778	
Overall collection ratio:[b] $G_{n_{a_t}} = \Sigma C_{n_{a_t}}/\Sigma S_{n_t}$	42.7		45.6		44.0		43.8	
Overall collection ratio:[c] $G_{n_{e_t}} = \Sigma C_{n_{e_t}}/\Sigma S_{n_t}$	42.7		44.8		35.0		25.0	

SOURCE: Computed from Eastern ORD Credit Accounts, 1980.

[a]ST and MT for Short Term and Medium Term Credit, respectively.

[b]Collection Ratios including repayments for arrears.

[c]Collection Ratios excluding repayments for arrears (i.e., only repayments of installments falling due that particular year are considered).

N.B. Repayments for arrears do not appear on this table but were accounted for in the computation of collection ratios where they were excluded.

ratio declined from 78.4 percent in 1976-77 to 40.7 percent in 1977-78, improved in 1978-79 and then worsened in the 1979-80 season. If repayments for arrears are excluded the situation is even more bleak. Excluding repayments for arrears reduces the collection ratio from 45.3 percent to 37.3 percent in 1978-79 and from 39.3 percent to 31.8 percent in 1979-80.

The repayment performance of short term credit has been deteriorating since 1976. The collection ratio, excluding repayments for arrears, has declined from 78.4 percent in 1976-77 to 40.7 percent in 1977-78, 37.3 percent in 1978-79 and 31.8 percent in 1979-80. Hence, except the 1976-77 season, the collection ratio has been substantially under 50 percent. This means that over the last three years, repayments for seasonal loans falling due have been less than half of scheduled repayments. The downward trend of the collection ratio is troublesome.

Another way of looking at the repayment performance is to consider the other side of the story, that is, delinquency rates. Delinquency has been increasing over time: up from 22.6 percent in 1976-77 to 59.3 percent in 1977-78, 62.7 percent in 1978-79 and 68.2 percent in 1979-80[1]. Further, the seemingly better showing of the 1976-77 year is due to the rather small amount of short term credit extended.

Regarding the medium term credit, the collection ratios show the same trends. Excluding repayments for arrears, repayment has improved from 37.8 percent in 1976-77 to 54.2 percent in 1977-78.

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[1]There was a credit agent strike in 1980 which may have adversely affected collection of loan repayments.

Thereafter, repayments had declined relatively with the collection ratio decreasing to 34 percent in 1978-79 and 21.5 percent in 1979-80. Again, except in 1977-78, delinquency has been increasing steadily over time, peaking last year with 78.5 percent of installments falling due not repaid.[1]

The overall repayment performance of the ORD credit program for both short and medium term credit is not encouraging. Table 5-10 shows the same downward trend with a slight improvement in 1977-78 and a delinquency rate of 75 percent in 1980. The overall situation is alarming and shows the classic symptoms of a financially weak credit program.

The use of the collection ratio to evaluate the repayment performance of a credit program involves some problems. The first problem is the treatment of interest charges. Should interest be included in both the numerator (i.e., installments actually paid) and the denominator (i.e., installments falling due)? In the collection ratios just described, interest has been included in both. In cases where it is not, one has to decide whether repayments should be credited against interest due or against principal in arrears. The second problem is whether all repayments should be included in the numerator, or only those related to installments falling due in the period under consideration. In the opinion of the writer, a meaningful evaluation of the financial situation of a credit program should just consider repayments against installments maturing in a given period of time. Adding repayments for arrears would improve

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[1]There was a credit agent strike in 1980 which may have adversely affected collection of loan repayments.

the collection ratio but this would not solve the underlying financial trouble of the lending institution. Furthermore, excluding repayments against arrears allows for a more realistic appreciation of the trend of the collection ratio on a yearly basis (or whatever period is considered). Misleading collection ratios may result in cases where repayments for arrears are included in the numerator because such ratios would still be positive even in these instances where repayments for installments maturing in the period under consideration are zero. The third kinds of problems in using the collection ratio method include the following: (1) treatment of prepayments; (2) amounts written off with subsequent repayments; (3) balances subject to foreclosure proceedings; (4) renewed balances on outstanding loans, etc.

Although the collection ratio is a useful indicator of repayment performance, the treatment of time as a discrete variable instead of a continuous flow variable may conceal an important difference between two identical ratios with collection occurring at different points in time. Thus, if 1000 CFA are falling due within a 12-month period and 900 CFA are collected the first month, the collection ratio would be 90 percent. Had the 900 CFA been repaid one day before the end of the period, the collection ratio would still be 90 percent. Hence, the timing of repayment has a significant financial meaning which is not revealed in the collection ratio.

Despite all these shortcomings the collection ratio is still a useful measure of repayment performance over time. It provides a quick assessment of the financial situation of a lending institution

in the absence of detailed accounting data for a much more sophisticated analysis.

3.2 The Percentage of Portfolio in Arrears

The percentage of portfolio which is in arrears is another repayment performance criterion which involves a comparison of the size of the total portfolio with the portion of the portfolio which is in arrears at a given point in time (usually at the close of an accounting period). The mathematical expression is the following:

$$Q_n = \frac{\Sigma A_n}{\Sigma P_n} \qquad (1)$$

where:

Q_n = proportion of the portfolio in arrears (in percentage) at the end of period n

ΣA_n = amount in arrears at the end of period n

ΣP_n = size of total portfolio at the end of period n

The computation of this indicator is simplified by the fact that it basically involves a comparison between two stocks. Furthermore, total portfolio and arrears are easier to establish than keeping track of a flow of repayments.

The results of the computation of the different percentages of portfolio in arrears are given in Table 5-11. Before proceeding further, some comments on the meaning of this indicator are in order. In instances where all installments falling due are totally repaid (i.e., no arrears), ΣA_n would be zero and Q_n would also be zero. Thus, a low Q_n value would indicate a low level of arrears relative to total portfolio outstanding (an important part of which may not be

TABLE 5-11

Eastern ORD Credit Repayment Performance: Percentage of Portfolio in Arrears 1976-1980

	1976/1977		1977/1978		1978/1979		1979/1980	
	ST[a]	MT[a]	ST	MT	ST	MT	ST	MT
Arrears at end of year: ΣA_n (CFA)	6,120	169,880	3,262,141	1,330,965	3,898,401	9,639,321	8,276,215	19,735,962
Total Portfolio at end of year: ΣP_n (CFA)	6,120	10,729,300	4,879,222	52,773,954	5,401,524	59,177,362	8,276,215	71,527,525
Percentage of Portfolio in arrears: $Q_n = \Sigma A_n / \Sigma P_n$	100	1.6	66.9	2.5	72.2	16.5	100	27.6
Overall arrears at end of year: ΣA_{n_t} (i.e., ST + MT) (CFA)		17,600		4,593,106		13,537,722		28,012,177
Overall Portfolio at end of year: ΣP_{n_t} (CFA)		10,735,420		57,653,176		64,578,886		79,803,738
Percentage of Overall Portfolio in arrears: $Q_{n_t} = \Sigma P_{n_t} / \Sigma P_{n_t}$		1.6		8.0		21.0		35.1

SOURCE: Computed from Eastern ORD Credit Accounts, 1980.

[a]ST and MT for Short Term and Medium Term Credit, respectively.

due yet). On the other hand, in a situation of total delinquency, ΣA_n would be maximum, and Q_n would get larger. However, one has to be extremely careful in interpreting this ratio for the very reason that P_n includes two parts: (1) A_n which is that portion of P_n due within the period under consideration, and (2) B_n which is that portion of P_n that has not matured yet. Hence,

$$Q_n = \frac{\Sigma A_n}{\Sigma A_n + \Sigma B_n} \qquad (2)$$

Equation (2) shows that both the numerator and the denominator are equally affected by a change in arrears. When arrears (ΣA_n) are zero, the ratio would be zero although ΣB_n may still be important. When arrears are at a maximum, in a situation of total delinquency, Q_n would get larger but will never be 100 percent unless ΣB_n is zero; that is, no new loans have been extended during that period. Thus, Q_n would vary between zero and 100 percent.

Table 5-11 indicates that, for short term credit, the percentage of portfolio in arrears was 100 percent for the years 1976-77 and 1979-80. In both years the numerator and the denominator (i.e., ΣA_n and $\Sigma A_n + \Sigma B_n$) are identical, meaning that new loans have not been provided at the close of the credit accounting year.[1] But, for the 1977-78 and the 1978-79 seasons the percentage of portfolio in arrears was 66.9 percent and 72.2 percent, respectively, indicating that some amount of loans has already been extended but has not matured yet. It should be noted that these ratios are extremely high as they vary between about 70 percent and 100 percent.

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[1]The credit accounting period ends on March 31 every year, whereas new loans are usually provided after that date.

The medium term credit situation is quite different. The percentage of portfolio in arrears varies from about 2 percent in 1976-77 to about 28 percent in 1979-80. These low ratios, however, are misleading because the disbursement of new loans is occurring at a faster rate than outstanding loans fall due, which is typical of credit institutions of Third World countries which are heavily funded by external donors. In general these ratios tend to be smaller for medium term loans than for short term loans for the obvious reason that a large portion of the former has not reached maturity at a given point in time. The overall low percentages of portfolio in arrears appearing in Table 5-10 reflect this situation rather than an improvement in portfolio quality.

There are a number of tricks which can be used to improve performance figures. One of those tricks consist of charging off arrears as bad debt losses. This would reduce both numerator and denominator by an identical amount. Also, performance, as reflected by the percentage of portfolio in arrears may look good if the lending institution deliberately fails to reduce the denominator by the amount of write offs while reducing the numerator. Our analysis shows that the way the collection of repayments is handled (i.e., either charged against loans falling due or against arrears) and the definition of what is really meant by arrears, have an important bearing on the indicators computed for repayment performance analysis.

3.3 The Proportion of Borrowers Meeting Repayment Obligations

The third indicator, as mentioned above, is the proportion of borrowers meeting repayment obligations. This indicator is simply a comparison between those borrowers who have installments falling due within a given period and those who actually repay during that period. This proportion can be expressed as follows:

$$Z_n = \frac{\Sigma B_{rn}}{\Sigma B_n}$$

where:

Z_n = proportion of borrowers with installments (or loans) falling due who actually repay during period n (in percentage)

ΣB_n = total number of borrowers having installments due in period n

ΣB_{rn} = number of borrowers who repay installments maturing in period n

Due to non-availability of relevant data it was not possible to compute this indicator for the three-year period of 1976-79. The only available data were for 1979-80 when 502 of 2,851 (or 17.6 percent) borrowers repaid installments falling due during the year. The usefulness of this measure is rather dubious because it does not provide information about the most important factor--the value of installments actually repaid.

Although there are serious limitations in using the proportion of borrowers-who-repay criterion for appraising repayment performance, it can be a useful indicator in some instances. For example,

when credit is extended through village organizations (e.g., cooperatives, village groups, etc.) like in the Eastern ORD, the proportion of loan repayers provides a good indication of the cohesiveness of these groups. Further, when group membership is a prerequisite for eligibility for a loan, groups may be formed only on this basis with no strong ties among participants other than the objective of obtaining a loan. Such village groups are doomed to disintegration once each farmer has received his loan. This was clearly illustrated in SATEC's credit experience in Chapter IV.

Like other repayment measures, the proportion of borrowers meeting repayment obligations has a number of problems that one should be aware of. For example, does the numerator (i.e., borrowers actually repaying) also include borrowers with loans overdue at the start of the period under consideration? Are those repaying only part of their installments taken into account or are they excluded? And so forth.

Another usefulness of this repayment indicator is that borrowers who repay and borrowers who do not repay may have different characteristics which may be valuable information to the lender. It also provides an indication of how much additional cost would have to be incurred to collect arrears.

3.4 Causes of Loan Repayment Delinquency and of Poor Repayment Performance

In view of the poor repayment performance of the ORD credit program, a separate study of 869 current medium term borrowers was

conducted in October of 1978,[1] in an attempt to pinpoint the causes of loan repayment delinquency and default. The study revealed that 37 percent of the cases of delinquency were attributed to the farmers themselves; 37 percent to the credit institution (the ORD) and 25 percent were due to nature.

3.4.1 The Farmer's Responsibilities

The survey revealed that the single most important reason for the delinquency is that a substantial number of farmers consider the loan from the ORD as a one time deal. Since no future loan is expected, there is no need to meet repayment obligations. An important reason why farmers repay private money lenders first, is the shame that delinquency entails. The survey also revealed that evading a loan repayment to the ORD is not perceived as being as shameful and disgraceful as failing to meet loan obligations with a private lender. Also, the ORD's loan collection procedures are perceived as being soft as compared with the tougher methods used by private lenders to insure repayments.

3.4.2 The ORD's Responsibilities

The survey revealed that the ORD was responsible for 37 percent of all cases of delinquency. The overriding reason is administration neglect. The 37 percent of the cases of delinquency attributed to the ORD were broken down by the following problems:

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[1] The findings of this study were summarized in a paper presented at a Rural Credit Conference in London in June 1979: Thomas Stickley and Edouard Tapsoba, "Loan Repayment Delinquency in the Eastern ORD of Upper Volta," in Borrowers and Lenders, edited by John Howell, Overseas Development Institute, London, 1980.

(1) 29 percent of the cases of delinquency were caused by the late delivery of animal traction equipment; (2) 3 percent were due to the fact that the draft animals purchased were too young and too small; (3) 3 percent were due to ORD credit agents dropping in unannounced to collect loan repayments without advance notice; and (4) 2 percent were caused by the fact that the agent who went to collect the repayment money was different from the one who actually processed the loan. Farmers were confused, and therefore refused to repay as they did not know the new agent.

3.4.3 Natural Causes

The survey revealed that 26 percent of all cases of delinquency were attributed to bad weather (especially drought), death and sicknesses of both farmers and draft animals.

3.4.4 Embezzlement of Repayment Funds

Embezzlement of loan repayment money by credit agents has been a major concern to the ORD. Although no information on this problem has been made available to the writer, it would seem that the phenomenon is widespread and the amount of funds involved is quite substantial. Given the fact that most farmers are illiterate and the credit program is complicated, it is not surprising that credit agents have taken this golden opportunity to divert repayment funds.

The explanation of this behavior may be partly found in the fact that most of the extension/credit agents are oriented to an urban-way-of-living. They view their salaries as too small to keep pace with their unquenchable needs. Many agents have taken the job

as a last resort and there is no incentive for working hard. Finally, the ORD itself has been rather soft on agents guilty of embezzlement because the only penalty for agents who are caught is a payroll deduction equal to the amount of money embezzled.

4. Farmers' Understanding of the Credit Program and Their Perceptions of Its Advantages and Disadvantages

4.1 Farmers' Understanding of the Credit Program

The ORD's formal credit program involves a number of conditions, including interest rates, terms of repayment, group membership fees, insurance premiums for draft animals, etc. It is important for a farmer to understand these conditions before he borrows from the ORD. A farmer may be reluctant to repay his loan simply because he did not understand the conditions of the loan. The analysis of farmers' understanding of the credit program was based on information obtained from a one-shot questionnaire administered to both short and medium term loan borrowers.

Before analyzing the extent to which farmers understand the conditions of the loan, it was felt that it was important to obtain information about the purpose of the loan as perceived by farmers. The question asked was an open-ended, one-of-a-kind, "What was the purpose of the loan?" Table 5-12 shows that a majority of farmers reported that the most important purpose of the loan was to "increase production and revenue or profit."[1]

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[1]It is interesting to note that one farmer took out short term credit in order to save the cash he had on hand which points out that fungibility is a major phenomenon in credit-related issues.

TABLE 5-12

Eastern ORD: Farmers' Perceptions of the Purpose of Loan

Purpose	Short Term			Medium Term		
	Number of Farmers	Percentage		Number of Farmers	Percentage	
Increase production	18	40.9	63.6	53	66.2	71.2
Increase profit & revenue	10	22.7		4	5.0	
Work better	1	2.3		17	21.3	
To save own cash money	1	2.3		--	--	
Improve fertility of land	10	22.7		--	--	
Others	3	6.8		5	6.3	
Do not know	1	2.3		1	1.2	
Total	43	100		80	100.0	

SOURCE: Farm Survey Data, 1978-79.

Table 5-13 shows that about 20 percent of the farmers who obtained medium term credit knew the value of their loan package, while about 60 percent did not. Moreover, only 11 percent knew the cash value of their equipment package, while 76 percent did not.

Table 5-14 shows that about 36 percent knew the credit value of the inputs they obtained on credit, 32 percent gave a wrong figure and 32 percent said they did not know. Furthermore, 25.5 percent knew the cash price of the seasonal inputs and as high as 53 percent said they just did not know.

In trying to get a feel for the farmers' understanding of interest charged on loans by the ORD, they were asked to define the difference between credit value and cash value. Out of the 51 who obtained a short term credit, 37 answered the question. Of those, 62.2 percent said that the difference was the ORD's profit and the other 37.8 percent said they did not know what such a difference meant. When the same question was put to farmers with medium term loans, 69.7 percent of the 76 who answered (of a total of 94) said the difference was the ORD's profit, whereas the rest just said they did not know what that difference was.

Pursuing this investigation about farmers' understanding of the conditions of the ORD credit program, it was of utmost importance to assess the extent to which they clearly understood the terms of the two types of credit. Officially, farmers have twelve months to repay short term loans. Table 5-15 shows that 53 percent of the 51 short term borrowers gave the right answer (i.e., twelve months); whereas about 31 percent thought they had six or seven months to repay their loans. Still, about 10 percent believed they

TABLE 5-13

Eastern ORD: Farmers' Knowledge of the Credit and Cash Value of Animal Traction Equipment Items

	Credit Value of Equipment		Cash Value of Equipment	
	Number of Farmers	Percentage	Number of Farmers	Percentage
Valid answer	18	19.8	10	10.9
Invalid answer	18	19.8	12	13.0
Do not know	55	60.4	70	76.1
Total	91	100	92	100.0

SOURCE: Farm Survey Data, 1978-79.

TABLE 5-14

Eastern ORD: Farmers' Knowledge of the Cost of Items Purchased with Short Term Credit

	Credit Value of Short Term Inputs		Cash Value of Short Term Input	
	Number of Farmers	Percentage	Number of Farmers	Percentage
Valid answer	17	36.2	12	25.5
Invalid answer	15	31.9	10	21.3
Do not know	15	31.9	25	53.2
Total	47	100	47	100.0

SOURCE: Farm Survey Data, 1978-79.

TABLE 5-15

Eastern ORD: Farmers' Perceptions of the Length of Time for Repayment of Short Term Loans

Time (in months)	Number of Farmers	Percentage
6	13	25.5
7	3	5.9
12	27	52.9
After harvest	5	9.8
Do not know	3	5.9
Total	51	100.0

SOURCE: Farm Survey Data, 1978-79.

had to repay during harvest time and 6 percent did not have the vaguest idea when they were supposed to repay. The reason why almost one-third of the farmers thought that they had six or seven months to repay their loans was probably due to the fact that most farmers receive their inputs on credit just before the growing season (April and May) and by harvest time some credit agents have already started to pressure them for repayments (November-December). Looking at how well medium term borrowers understood the terms of repayment, it was found that over two-thirds knew exactly the period of repayment (i.e., number of years), whereas a little less than one-third gave an inaccurate figure.

4.2 Farmers' Perceptions of the Advantages and Disadvantages of the ORD Credit Program

Before analyzing the farmers' perceptions of the advantages and disadvantages of the ORD's formal credit program, it is worthwhile to get an idea of the reasons advanced for not participating in that program. The survey revealed that nearly half of the farmers who did not participate in the ORD medium term credit program lacked information. Other reasons for not participating included: fear of not meeting repayment obligations, poverty, lack of interest and the lack of an extension agent in the village.

Perhaps an explanation is needed concerning those who answered "lack of information and ignorance." The ORD does not have the necessary field personnel to cover its entire territory. It is not surprising that a sizeable number of farmers cannot have access to

the credit program. Reasons advanced by farmers for not participating in the short term credit program are similar to those given for not participating in the medium term credit program.

The advantages of the ORD credit program as viewed by farmers are given in Table 5-16. Of the 43 farmers who have taken both short and medium term loans, over 25 percent think that the main advantage is a longer period for repayment. About 21 percent view repayment by installments as an advantage, whereas 14 percent perceive the precise schedule for repayment as another advantage as opposed to informal credit where, as will be seen later, no time is specified.

An interesting conclusion that can be drawn from the analysis of the advantages of the ORD credit program perceived by farmers is the fact that only 2.3 percent of farmers who have taken both types of loans mentioned the low interest charged by the lending institution. One would have expected that an overwhelming majority of borrowers would cite low interest as the central advantage. Rather, it appears that it is a minor advantage in the mind of farmers. This is an interesting revelation as it would indicate that interest rate is not that crucial after all in the decision of farmers to participate in the credit program.

The survey also revealed that almost 90 percent of short term and medium term credit borrowers did not think that there were other alternative sources of credit in rural areas to finance acquisition of "modern" agricultural inputs and ANTRAC equipment. They cited poverty, lack of interest and the fact that farmers are not used to borrowing for this purpose.

TABLE 5-16

Eastern ORD: Farmers' Perceptions of ORD Credit Program Advantages[a]

Advantages	Number of Farmers	Percentage
Long time allowed for repayment	11	25.6
Repayment by installments	9	20.9
Precise schedule for repayment	6	14.0
Increase production	5	11.6
Easy repayment	3	7.0
Help for poor farmers	1	.2
Repayment by increased production with the use of equipment & seasonal inputs	1	2.3
There is no shame with the ORD	1	2.3
No big interest charges	1	2.3
Others	4	9.3
Total	43	100.0

SOURCE: Farm Survey Data, 1978-79.

[a]Of 43 farmers who obtained both short and medium term loans.

5. Impact of Credit on Production and Income

5.1 Potential Problems in Evaluating Agricultural Credit Impact

Any expost-evaluation of an agricultural credit program poses serious problems. Such problems are even more troublesome when only cross-sectional data are available. There are three major problems. First is the lack of benchmark data. Second is the difficulty in isolating the role of credit in influencing the production process which involves many variables. The third problem is fungibility.

Von Pischke and Adams [1979] argue that fungibility can be defined as the diversion of credit to other uses. For example, money obtained through an agricultural credit program can be diverted from its intended purpose and used for other purposes. Even when loans are extended in kind, such as fertilizer, it is easy for farmers to turn the inputs into cash.

Rice [1977] notes that there are major difficulties in getting reliable information to measure the impact of credit. The first problem is the lack of reliable information at the farm level on capital assets, record of input use, and incremental impact on production and productivity related to input use (e.g., yield increase). The second problem area is the variability in yields especially in rainfed agriculture which points to the difficulties of using data obtained in a single agricultural period. Unfortunately, most project analysts do not have either the time or the resources to collect input-output data over a long period of time. Usually an evaluation is performed two or three years after credit resources have been

depleted, particularly with projects financed by international institutions such as the World Bank or USAID.

The third problem area is isolating the effect of credit on output when many variables can have the same effect as credit. This problem is called "attribution" effect. A number of project analysts, especially at the World Bank, have substituted the term "associated with" for "attributed to." The use of the term "associated with" does not imply the certainty and exclusiveness that the latter (i.e., "attributed to") would seem to indicate. When time and resources permit the selection of a control group of farmers, the selection of non-participating farmers should be made very carefully so that they are not extremely different from those participating in the program.

Finally, the fourth problem area has been identified as the "substitution" effect. Substitution takes place whenever a farmer, regardless of the project, would have acquired the inputs without the credit. The substitution problem is important especially for credit projects. One would reasonably assume that the number of farmers participating in a credit program would serve as a fairly good indicator of the extent to which credit resources constitute a real constraint. But, when there is evidence that some participating farmers would have purchased the inputs anyway, then, the resulting impact cannot be entirely attributed to the project but also this would imply that credit was not a real constraint.

The substitution effect cannot be dismissed as being unimportant because credit provision is based on the fundamental assumption that real financial constraints do exist and that project money

would have a dramatic effect on production, income, capital formation and technological change. Ultimately, the impact of the credit is no more than the incremental changes brought about by those farmers who would not have spent their own financial resources to purchase agricultural inputs and other productive factors.

The problem with the substitution effect is that it is arduous to measure. A number of methods have been used in the past, especially by the World Bank economists. Such methods have consisted of interviewing participating farmers to find out whether they would have used their own money to purchase inputs. Another method consists of observing investment patterns of control groups and participating farmers. Using these various approaches, the World Bank has estimated the substitution effect to be as high as 40 percent in five countries [Rice, 1977].[1] Although this figure has been judged to be somewhat shaky, it does provide an idea of the possible magnitude of the substitution effect.

The problem of fungibility is likely to be important in a socioeconomic environment where "modern" agricultural inputs are perceived to be profitable by an important portion of the farming population. But, in a subsistence agriculture setting where farmers are still suspicious of the potential benefits of such inputs, and where a real profitable technological package has yet to be developed, it is not at all certain that fungibility is a major problem. In that case, which is also that of the Eastern ORD, the evaluation of the impact of credit is perhaps more meaningful.

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[1]The five countries are Mexico, Uruguay, Morocco, Pakistan and the Philippines.

Regarding the substitution problem, the survey has showed that 27 percent of ANTRAC farmers (i.e., 34 farmers out of 128) have purchased their equipment with cash. This means that there is a substitution effect which cannot be completely ignored. The majority of farmers did not think that there were other alternative sources to the ORD credit funds. A major problem is that the analysis relies on a single season data with the effects of important variables unaccounted for. Nevertheless, it is thought that this evaluation will provide a feel for the degree of change which may be associated with the use of traction packages obtained through the ORD credit program.

5.2 The Impact of Credit on Production and Income of Farmers in the Eastern ORD.[1]

We shall now examine the impact of medium term credit on the production and income of ANTRAC and hoe farmers in the Eastern ORD during the 1978-79 agricultural season.

Although only 91 out of 125 ANTRAC farmers used medium term credit to acquire traction equipment, the 31 who purchased their traction package with cash were included to increase the sample size in order to obtain as much information as possible. The evaluation exercise will focus on the performance of oxen traction/donkey traction and hoe cultivation technologies in a comparative analysis framework. To facilitate the comparisons among the three different technologies (i.e., oxen traction, donkey traction and hoe) the data

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[1] Figures used in this evaluation were obtained from a paper on animal traction drawing on the same survey data base. For more detailed technical aspects of this technology see: Vince Barrett, et al., Animal Traction in Eastern Upper Volta: A Technical, Economic, and Institutional Analysis, January, 1981.

are treated slightly differently. Due to important agro-ecological variations across the twelve "zones of interest," it was necessary to include control groups of non-traction users (i.e., hoe users or TRAD[1] farmers) in each zone. Thus, only 108 TRAD households comprising the control groups were included in the sample within the five ANTRAC zones as shown in Table 5-17. In addition, TRAD agriculture performance is compared with that of oxen or donkey traction performance only within the relevant traction zones; that is, Diabo and Ougarou for oxen zones and Pièla, Diapangou and Logobou for donkey zones.

Since ANTRAC and TRAD samples were not of equal size within the same zone, a weighting procedure was used to compare samples aggregated from different zones.[2] But, this weighting was not used in the computation of variance or estimates of statistical significance because it would bias the results.[3]

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[1]TRAD: traditional.

[2]In the oxen zone for example (Diabo and Ougarou), Diabo has 53 (i.e., 75 percent) out of a total of 71 ANTRAC farmers and only 18 (i.e., 50 percent) out of the 36 TRAD control farmers. Hence, the Diabo control village (Monkontoré) has been given a low weight in calculating the control statistics. In the donkey zones (Pièla, Diapangou and Logobou), Logobou has 36 (i.e., 50 percent) of the 72 TRAD control farmers and 18 (i.e., 33 percent) of the 54 ANTRAC farmers. Therefore, the Logobou traction village has been given a double weight. Thus, the overall weights are as follows:

Oxen Zones: 75% Diabo + 25% Ougarou
Donkey Zones: 50% Logobou + 25% Pièla + 25% Diapangou
All ANTRAC Zones: 50% oxen zones + 50% donkey zones

[3]Fifteen ANTRAC farmers were excluded from the financial analysis because of seven donkey farmers residing in oxen zones (three in Ougarou and four in Diabo) and eight oxen farmers residing in donkey zones (three in Pièla, one in Logobou and four in Diapangou).

TABLE 5-17

Technical Characteristics of Farm Households
in the Oxen and Donkey Zones, 1978-1979

	All ANTRAC Zones		Oxen Zones		Donkey Zones	
	TRAD	ANTRAC	TRAD	ANTRAC	TRAD	ANTRAC
Number of Households Evaluated[a]	108	110	36	64	72	46
Persons per Household	7.75	11.21	6.67	11.14	8.83	11.27
"Actifs" per Household	3.50	4.71	3.04	5.27	3.96	4.14
Total Area Cultivated (ha)	4.30	6.59	3.96	7.13	4.64	6.04
Total Area Cultivated per Person (ha)	0.560	0.588	0.593	0.640	0.526	0.536
Total Area Cultivated per "Actif" (ha)	1.26	1.39	1.29	1.33	1.22	1.45
Proportion of Area in:						
Millet and Sorghum (%)	80.1	74.7	79.1	77.5	81.0	71.8
Groundnuts	9.6	9.6	10.3	6.8	8.8	12.4
Maize	3.0	3.4	3.3	3.8	2.7	2.9
Cotton	0.2	1.9	0.1	2.1	0.3	1.7
Rice	2.2	2.8	1.9	3.5	2.4	2.0
Soybeans	0.5	3.8	0.5	3.9	0.4	3.6
Other Crops	4.6	4.0	4.8	2.4	4.4	5.6
Yield per Hectare of:						
Millet and Sorghum (kgs)	466	468	555	554	377	381
Groundnuts	213	238	59	179	366	296
Maize	425	686	500	746	349	585
Cotton	108[b]	171	118[b]	253	97[b]	88
Rice	442	465	329	630	554	300
Soybeans	283[b]	197	241[b]	294	324[b]	99

SOURCE: Farm Survey Data and Barrett, et al. [1981].

[a]Because of time and resource constraints, complete area data was collected for only two-thirds of these households. In a random one-third sub-sample only sorghum and millet fields were measured. While harvest data was collected on all crops for all households, yield and area data presented in this table are based only on the two-thirds sub-sample.

[b]These estimates are based on a small number of observations representing less than one hectare of cropland per zone.

Medium term credit is provided only for production purposes in the form of implements (plows, weeders, ridgers) and for draft animals. Thus, the criteria which will be used in the evaluation of the performance of the three different technologies are: (1) acreage effect, (2) yield effect, and (3) revenue or income effect.

In comparing all three performance criteria an important factor to be considered is the fact that ANTRAC farmers, both oxen and donkey, generally have larger family sizes than their TRAD counterparts. They also have a larger work force as evidenced by the number of actifs[1] shown on Table 5-17. The number of actifs is only slightly larger for donkey farmers. Also, the number of dependent persons (i.e., non-actifs) is somewhat similar for both oxen farmers and their control TRAD counterparts: 52.7 percent and 54.2 percent, respectively. But, this difference is much larger between donkey farmers (63.3 percent) and their control farmers (55.2 percent).

5.2.1 Acreage Effects

The acreage effect can be analyzed by drawing on data in Table 5-17 which shows that the acreage under cultivation is higher for ANTRAC farmers than for TRAD farmers. This difference is not statistically significant on a per person basis. Because total acreage depends on the number of actifs, the best measure of the acreage effect is the area cultivated per actif. On this basis, the difference is 3.1 percent higher for oxen traction farmers than for TRAD control farmers; 18.8 percent higher for donkey traction than

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[1] "Actif": a person of 15 to 55 years old engaging in farming activities.

their TRAD control counterparts. The acreage of ANTRAC farmers per actif is 10.3 percent higher than that of TRAD farmers.[1]

5.2.2 Yield Effects

Turning to yield effects[2], the yields of most crops are higher for ANTRAC farmers except for millet and sorghum. Because of the small sample size for minor crops, however, only corn yields in all zones and groundnuts in oxen zones have statistically significant yield increases. The most important feature of yields is that, in general, they are extremely low, especially in donkey traction zones. This is because half of the donkey sample (Pièla and Diapangou) had suffered a severe drought in the 1978-79 growing season. The effects of this drought should be taken into account in comparing the performance of oxen and donkey traction farmers.

5.2.3 Income Effects

5.2.3.1 Value of Crop Production

The total gross value of crop production per household is presented in Table 5-18 for the 1978-79 production season broken down by value of each major marketable crop in order to demonstrate

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[1]Of these three estimates only the latter two are statistically significant. All "statistical significance" calculations refer to a 95 percent confidence level indicated by F statistics based on a two-way analyses of variance.

[2]Yields figures are weighted averages based on estimates of total annual household production. The yield estimates are lower than yield plot estimates for 1978. Yield plots tend to overestimate yields for a number of reasons: (1) "border effect," yield plots, (2) yield plots harvest error by farmers, and (3) "lost" plot harvest in abandoned fields and excluded from the analysis.

TABLE 5-18

Average Value of Crop Production and Price/Kg by TRAD and ANTRAC Farmers in Oxen and Donkey Zones, 1978-1979

Crop	Price/Kg[a]	Oxen Zones				Donkey Zones			
		TRAD		ANTRAC		TRAD		ANTRAC	
		FCFA	Percentage	FCFA	Percentage	FCFA	Percentage	FCFA	Percentage
Sorghum	45.5	59,821	69.9	80,638	54.3	30,637	36.6	37,223	35.6
Millet	45.5	12,792	14.9	29,010	19.6	15,781	18.9	13,343	14.2
Niadi[b]	45.5	0	0.0	14	0.0	6,152	7.4	10,576	11.2
Subtotal		72,613	84.8	109,647	73.9	52,569	62.9	61,142	65.0
Maize	39.6	2,663	3.1	6,722	4.5	2,376	2.8	2,982	3.5
Groundnuts	68.9	1,971	2.3	4,824	3.3	9,507	11.4	11,557	12.3
Bambera Nuts	59.0	1,103	1.3	1,234	0.8	932	1.1	1,115	1.2
Cowpeas	73.2	5,192	6.1	9,968	6.7	6,813	8.1	6,614	7.0
Soybeans	72.4	239	0.3	4,273	2.9	237	0.3	1,023	1.1
Sesame	57.6	6	0.0	39	0.0	354	0.4	566	0.6
Cotton	67.4	58	0.1	1,806	1.2	61	0.1	925	1.0
Rice	90.2	1,746	2.0	9,843	6.6	5,990	7.2	7,800	8.3
Overall Total		85,591	100.0	148,356	100.0	86,601	100.0	94,012	100.0

SOURCE: Farm Survey Data and Barrett, et al. [1981].

[a]This represents the weighted average selling price realized by sample households during the 1978-79 survey period.

[b]A 60-day, short season millet variety grown in the Logobou and Pama areas.

the relative importance of the different crops. Prices used to value production are weighted average sales prices, or "realized prices" at the farm level during the 1978-79 season. Millet and sorghum are the most important crops.

The sources of income and efficiency measures for farm households are presented in Table 5-19. The total annual net value of crop production in oxen zones is shown to be 78,622 CFA for TRAD farmers and 146,220 CFA for ANTRAC farmers. In donkey zones, TRAD farmers have a net crop production value of 75,572 CFA as opposed to 71,099 CFA for donkey traction farmers. Although oxen households have higher net incomes, they also are 67 percent larger than their TRAD counterparts. Likewise, donkey households are 28 percent larger than TRAD households in donkey zones. Thus, when net crop production value is computed on a per person basis, the oxen households have a 4.5 percent higher value of net crop production than TRAD farmers. But, donkey households have a 11.9 percent lower net value than TRAD counterparts. Net production revenue per actif does not show significant differences between ANTRAC farmers and TRAD farmers. Donkey farmers had lower net crop revenue per actif than TRAD farmers but the effects of the drought makes this comparison meaningless.

5.2.3.2 Cost Effects

The impact of ANTRAC in terms of cost is significantly more important than that on revenue. Contrary to common belief, ANTRAC is not a low cost technology in a context of subsistence agriculture as it brings about a number of production costs significantly higher than those known to TRAD agriculture.

TABLE 5-19

Summary of Sources of Income and Efficiency Measures
for Farm Households, 1978-1979

	Oxen Zones		Donkey Zones	
	Hoe	ANTRAC	Hoe	ANTRAC
Value of Major Sources of Income	FCFA	FCFA	FCFA	FCFA
I. Crop Production	78,622	146,220	75,572	71,099
II. Livestock Raising	- 1,970	5,135	5,818	1,396
III. Crop Trading	175	930	942	1,922
IV. Agricultural Processing	528	3,178	702	- 1,420
V. Other Sources	36,359	12,543	511	20,042
NET FARM INCOME[a]	77,355	155,463	83,026	72,997
NET HOUSEHOLD INCOME	113,714	168,006	83,537	93,039
Relative Importance of Sources of Income	Percent	Percent	Percent	Percent
I. Crop Production (% of total)	69.1	87.0	90.5	76.4
II. Livestock Raising	- 1.7	3.1	7.0	1.5
III. Agricultural Trading	0.2	0.6	1.1	2.1
IV. Agricultural Processing	0.5	1.9	0.8	- 1.5
V. Other Sources	32.0	7.5	0.6	21.5
Efficiency Measures	FCFA	FCFA	FCFA	FCFA
Net Crop Production Revenue per Person	11,787	13,126	8,559	6,309
Net Crop Production Revenue per "Actif"	25,863	27,745	19,084	17,174
Net Crop Production Revenue per Hectare	19,854	20,508	16,287	11,771
Net Farm Income per Person	11,597	13,955	9,403	6,477
Net Farm Income per "Actif"	25,446	29,450	20,968	17,632
Net Farm Income Hectare	19,534	21,804	17,894	12,085
Net Household Income per Person	17,049	15,081	9,461	8,256
Net Household Income per "Actif"	37,406	31,879	21,095	22,473
Net Household Income per Hectare	28,716	23,563	18,003	15,404

SOURCE: Farm Survey Data and Barrett, et al. [1981]

[a]Net Farm Income is the sum of major income components I through IV.

Table 5-20 shows that annual variable costs for ANTRAC farmers were 5,544 CFA for oxen farmers and 4,134 CFA for donkey farmers. The fixed costs (excluding depreciation on draft animals) were 8,224 CFA for oxen farmers and 6,243 CFA for donkey users. The variable costs are 59 percent and the fixed costs are 154 percent higher for oxen than for TRAD farmers, while for donkey farmers these costs were, respectively, 44 percent and 127 percent higher than those for TRAD farmers.

Although costs associated with the adoption of ANTRAC are extremely high for subsistence farmers, there are several attractive features of owning ANTRAC equipment: revenues generated from carting, plowing and the increase in value of oxen. While such contract revenues are rather insignificant for oxen farmers (only 660 CFA) because of lack of popularity of oxen carts, the resale value of oxen is substantial. For example, it is estimated that the annual increase in value of an ox is about 10,000 CFA (i.e., 20,000 CFA for a pair), which more than covered the cost of maintaining a pair of oxen in 1978. Contract revenues for donkey farmers were higher than for oxen farmers, mainly, because of the income generated from the use of donkey carts. The problem with donkeys is that, unlike oxen, they depreciate in value over time and this depreciation more than offsets the revenues accruing to an owner of a donkey. On an overall cost assessment basis, our survey revealed that donkey traction was less costly than oxen traction. Hence, donkey traction is likely to be more appealing to poor farmers. The appreciation in value of oxen, however, has been substantial in recent years.

TABLE 5-20

Farm Household Annual Income Statement, 1978-1979

	Oxen Zones		Donkey Zones	
	TRAD	ANTRAC	TRAD	ANTRAC
Number of Households	36	64	72	46
I. Crop Production Enterprise				
Revenue				
Value of Crop Production[a]	85,591	149,356	83,601	94,012
of Which, Value Sold	6,661	9,680	9,569	13,798
Contract Plowing Revenues	0	+ 524	0	+ 70
Contract Transport Revenues	0	+ 136	0	+ 1,635
Variable Costs				
Purchased Seed	- 484	- 583	- 784	- 1,273
Value of Household Seed[a]	- 4,175	- 7,930	- 4,444	- 6,981
Fertilizer and Insecticides	- 28	- 402	- 153	- 788
Wage Labor	- 250	- 490	- 217	- 315
Grain Purchased for "Invitation" Field Labor[b]	0	- 31	0	- 48
ANTRAC Feed Grain (Purchased)	0	- 640	0	- 328
ANTRAC Feed Grain (Value of Household Grain)[a]	0	- 1,672	0	- 2,826
Other ANTRAC Maintenance Costs[c]	0	- 3,232	0	- 980
Fixed Costs				
Repairs to ANTRAC Equipment	0	- 68	0	- 26
Replacement Parts for ANTRAC Equipment	0	- 1,012	0	- 1,075
Interest Payments for ANTRAC Credit	0	- 1,915	0	- 47
Depreciation on ANTRAC Equipment[e]	0	- 5,229	0	- 5,095
Depreciation on ANTRAC Animals[e]	0	+22,645	0	- 2,031
Repairs of Other Tools and Equipment	- 36	- 67	- 61	- 77
Depreciation on Other Tools and Equipment	- 1,996	- 3,170	- 2,324	- 2,678
Net Revenue				
Net Revenue from Crop Production	78,622	146,220	75,572	71,099
II. Livestock Enterprise				
Revenue				
Sales of Animals	3,652	27,693	17,337	33,281
Sales of Animal Products	345	5,434	1,684	680
Costs				
Animal Purchases	- 5,556	-26,961	-10,127	-30,924
Feed and Maintenance Expenses	- 441	- 1,031	- 3,076	- 1,641
Net Revenue				
Sub-total	- 1,970	5,135	5,818	1,396
III. Agricultural Trading				
Revenue				
Value of Sales (Net of Transport Costs)	1,594	2,877	7,867	17,913
Costs				
Value of Purchases (Net of Transport Costs)	- 1,358	- 3,406	- 6,682	-19,402
Depreciation	- 61	- 599	- 234	- 215
Change in Value of Inventories[a]	0	+ 2,058	- 9	+ 3,626
Net Revenue				
Sub-total	175	930	942	1,922
IV. Agricultural Transformation & Gathered Crops				
Revenue				
Sales of Transformed Crops	1,052	2,744	1,994	8,185
Sales of Gathered Crops	513	3,406	994	631
Costs				
Purchases of Variable Inputs	- 797	- 2,718	- 1,489	- 9,897
Depreciation on Equipment	- 240	- 254	- 797	- 339
Net Revenue				
Sub-total	528	3,178	702	- 1,420
NET FARM INCOME	77,355	155,463	83,026	72,997
V. Other Sources of Income				
Revenue				
Gross Returns to Non-Ag. Trading & Artisanal Activities	38,422	14,822	8,858	34,385
Salaries	11	484	0	4,817
Pensions	0	5,807	9	860
Inheritance & Net Cash Gifts	- 382	14	- 2,673	5,972
Costs				
Variable Costs of Non-Ag. Trading & Artisanal Activities	- 1,120	- 7,943	- 5,156	-24,457
Depreciation	- 572	- 641	- 527	- 1,535
Net Revenue				
Sub-total	36,359	12,543	511	20,042
TOTAL NET HOUSEHOLD INCOME	113,714	168,006	83,537	93,039

SOURCE: Farm Survey Data and Barrett, et al. [1981].

TABLE 5-20 (continued)

Footnotes:

[a]Crop values based on average "realized" sales prices listed in Table

[b]"Invitation" labor refers to festive work parties of a reciprocal nature in which food and sorghum beer are the primary in-kind payment. These cash purchases of grain substantially understate the real costs of invitation labor which primarily utilize household food stocks, rather than purchased grain.

[c]Chiefly non-grain feeding expenses, salt, and medicines for animal maintenance.

[d]Refers to cart rental services. This does not include the sale of carted products, such as firewood, but only the rental of the cart for transport use.

[e]The following straight line depreciation schedule was used for ANTRAC equipment and animals. (Note that these are for all types of equipment. The table figures represent average depreciation for the equipment actually owned by farmers):

ANTRAC Item	1978 Price (FCFA)	Estimated Working Life (Years)	Salvage Value (FCFA)	Annual Depreciation (FCFA)
Oxen Traction:				
Plow	18,250	10	2,000	1,625
Weeder	19,635	7	1,500	2,591
Ridger	6,470	5	500	1,194
Accessories	7,225	5	250	1,395
Cart	44,735	10	3,000	4,174
1 Ox	35,000	4	75,000	+10,000
Donkey Traction:				
Plow	11,320	10	1,000	1,032
Weeder	17,200	8	1,500	1,963
Ridger	4,850	6	500	725
Accessories	5,185	5	200	997
Cart	44,735	10	2,000	4,274
1 Donkey	18,000	7	3,000	2,143

SOURCE: Farm Survey Data and Barrett, et al. [1981].

5.2.3.3 Cash Flow Analysis

The figures on the annual cash flow statement presented in Table 5-21 show that ANTRAC current cash expenses and loan repayment impose a cash flow burden on both ANTRAC oxen and donkey farmers. The cash flow problem is most pressing for oxen farmers. Moreover, net cropping cash revenue is only 3,156 CFA for oxen farmers compared with 4,909 CFA for TRAD farmers in the oxen zone.

Donkey traction farmers fared somewhat better than oxen farmers because current cash expenses for donkey farmers are substantially offset by revenue generated by traction services. Also, the net cash revenue generated from crop production for donkey farmers is significantly higher than TRAD farmers in the same zone.

The burden of current cash expenses for ANTRAC is even heavier when cash expenditures for food purchases are deducted from the net cropping cash revenue. The resulting net cropping cash surplus is regarded as a measure of the ability of a household to produce enough food, not only to feed the family, but also to generate a cash surplus from and within the sole crop production enterprise. Table 5-21 shows that both ANTRAC and TRAD farmers experienced a negative net cropping cash surplus for 1978-79.

Although these results have been affected to a certain extent by the drought in 1978-79, Table 5-21 also reveals that both TRAD and ANTRAC farmers purchased substantial food grain in 1978-79 and experienced a negative net cropping cash surplus. This major finding shows that the underlying problem is low productivity of millet and sorghum in the region and not simply one of an inefficient animal traction package.

TABLE 5-21

Annual Cash Flow Statement for the Average TRAD and ANTRAC Farmer, 1978-1979

Cash Flow Item	Oxen Zones		Donkey Zones	
	TRAD	ANTRAC	TRAD	ANTRAC
Crop Production			FCFA	
1. Value of Sales	6,661	9,680	9,569	13,798
2. Non-ANTRAC Inputs	- 1,752	- 2,682	- 2,879	- 2,621
3. ANTRAC Related Current Cash Expenses	0	- 4,502	9	- 2,409
4. ANTRAC Related Revenues	0	+ 660	0	+ 1,705
5. Net Cropping Cash Revenue	4,909	3,156	6,681	10,473
6. Major Food Purchases	- 4,966	-11,617	- 9,505	-20,782
7. Net Cropping Cash Surplus	- 57	- 8,461	- 2,824	-10,309
Livestock Production				
8. Revenues	3,997	33,127	19,021	33,961
9. Expenditures	- 5,967	-27,992	-13,203	-32,565
Agricultural Trading				
10. Revenues	1,594	2,877	7,867	17,913
11. Expenditures	- 1,358	- 3,406	- 6,682	-19,402
Agricultural Processing				
12. Revenues[a]	1,565	6,150	2,988	8,816
13. Expenditures	- 1,037	- 2,972	- 2,286	-10,236
Other Sources of Income				
14. Revenues	38,051	21,127	6,194	46,034
15. Expenditures	- 1,120	- 7,943	- 5,156	-24,457
Capital Expenditures				
16. Non-ANTRAC Equipment Purchased	- 183	- 126	- 504	- 276
17. ANTRAC Equipment Purchased	- 333	- 640	- 0	- 2,399
Credit				
18. Borrowing and Reimbursements Received	1,155	6,853	2,854	9,169
19. Loans and Repayments	- 1,870	-19,237	- 3,138	- 7,724
20. Net Cash Flow	34,437	- 643	5,131	8,525

SOURCE: Farm Survey Data and Barrett, et al. [1981].

[a]Non-agricultural trading, artistic activities, salaries, etc.

Although 1978 may be considered as a stock rebuilding year (following several years of recurring drought), which may have accounted for the low sales observed, Table 5-21 shows that the value of crop sales was higher than crop purchases only for TRAD farmers. Further analysis shows that TRAD farmers seem to be more food self-sufficient than ANTRAC farmers. As a result, the ANTRAC farmers are forced to find alternative cash revenue generating activities in order to make up for their food short-fall and to meet cash flow requirements for the adoption of the ANTRAC technology. Table 5-21 shows that the cash deficit of the ANTRAC crop enterprise (net cropping surplus in Table 5-21) is offset by cash revenues from other activities, the most important of which is "other sources of income" (i.e., non-ag trading, artisanal activities, salaries, etc.).

Turning to cash credit transactions, Table 5-21 shows that the total value of both loans extended and repayment of debts made by ANTRAC farmers was 19,237 CFA in 1978-79. A total of 12,697 of the 19,237 CFA was to repay ORD medium term debt obligations. These figures must be treated with a great deal of caution because ANTRAC farmers were not a representative cross-section of farmers who were using animal traction equipment. For example, although 66 percent of the ANTRAC farmers had an outstanding medium term loan, many did not make any loan repayment in 1978-79. The other 34 percent had either completed repayment prior to the survey or had paid cash for their animals and/or equipment.

A more accurate appraisal of the impact of ANTRAC loan repayment on cash flow then would be to use the value of loan repayment which the average oxen or donkey farmer in the survey should have

repaid in 1978-79. Since the median ANTRAC farmer had three years of experience with the typical package (a pair of oxen and a plow or a donkey and a plow) this implies a repayment burden of 22,600 CFA a year for an oxen farmer and 14,175 CFA for a donkey farmer. Taking the value of these repayments into account, the net cash flow on an annual basis would be -10,546 CFA for oxen farmers and -5,366 CFA for donkey farmers.

While the survey reveals that oxen traction is financially more attractive than donkey traction (partially because of the effects of the 1978-79 drought) the adoption of oxen traction technology requires that farmers have access to other sources of cash revenue than crops to offset the cash flow deficits for the first four to five years until substantial capital gains can be achieved from the sale of oxen. Donkey traction farmers also face a cash flow problem but because of lower cash costs, they are less vulnerable than oxen farmers. The expansion of donkey traction in the EORD is probably due to the lower cash costs associated with its adoption even though it yields a lower financial return than oxen traction.

Although the analysis of cash flows for one year based on an average of the survey results provides some insight, the cash flow problem has to be analyzed on a more disaggregated approach--monthly basis--and a more dynamic approach. Thus, Tables 5-22 and 5-23 present detailed changes in the cash flow situation on a monthly basis for TRAD and ANTRAC farmers, respectively. These monthly averages reveal some common problems involved in the adoption of ANTRAC technology.

TABLE 5-22

Monthly Cash Flow Statement for Traditional Households, 1978-1979

Cash Flow Item	May 1-May 28, 1978	May 29-June 25	June 26-July 23	July 24-Aug. 20	Aug. 21-Sept. 17	Sept. 18-Oct. 15	Oct. 16-Nov. 12	Nov. 13-Dec. 10	Dec. 11-Jan. 7, 1979	Jan. 8-Feb. 4	Feb. 5-Mar. 4	Mar. 5-Apr. 1	Apr. 2-May 30, 1979
Crop Production													
1. Value of Sales	1,277	411	632	470	205	285	472	952	1,224	1,104	547	1,840	893
2. Non-ANTRAC Inputs	- 826	- 630	- 479	-217	-107	- 47	- 87	- 51	- 9	- 4	- 38	- 63	-102
3. ANTRAC Related Current Cash Expenses	0	0	0	- 9	0	0	0	0	0	0	0	0	0
4. ANTRAC Related Revenues	0	0	0	0	0	0	0	0	0	0	0	0	0
5. Net Cropping Cash Revenue	451	- 219	153	244	98	238	385	901	1,215	1,100	509	1,777	791
6. Major Food Purchases	-1,375	-1,164	-1,559	-652	-897	-753	- 322	-213	- 471	-330	-341	-384	-638
7. Net Cropping Cash Surplus	- 924	-1,383	-1,406	-408	-799	-515	63	688	744	770	168	1,393	153
Livestock Raising													
8. Revenues	1,380	1,714	1,285	1,141	581	647	2,279	204	961	1,375	711	1,279	1,112
9. Expenditures	-1,252	- 800	-1,379	-762	-697	-880	-1,683	-321	- 535	-443	-870	-426	-770
Agricultural Trading													
10. Revenues	1,613	843	251	224	839	66	124	51	200	566	106	1,055	302
11. Expenditures	- 66	- 311	- 16	-280	- 86	-249	- 776	-829	-1,185	-462	-356	- 19	-467
Agricultural Transformation and Gathering													
12. Revenues	145	306	28	192	108	302	187	119	230	54	349	289	245
13. Expenditures	- 81	- 141	- 113	- 55	- 58	-138	- 103	-205	- 84	-174	- 88	- 54	- 8
Other Sources of Income													
14. Revenues	421	50	1,486	1,039	554	575	630	948	336	596	803	4,669	720
15. Expenditures	- 258	- 85	- 425	-377	-380	- 77	- 316	-164	- 904	- 41	-420	-181	-137
Capital Expenditures													
16. Non-ANTRAC Equipment Purchased	- 19	0	- 29	- 6	- 42	- 38	- 33	- 29	- 125	- 32	- 12	- 3	- 24
17. ANTRAC Equipment Purchased	- 1	- 91	- 12	0	0	0	0	0	0	0	0	0	0
Credit													
18. Borrowing and Reimbursements Received	108	133	137	418	136	325	346	62	382	54	206	20	77
19. Loans and Repayments	- 356	- 187	- 221	-263	-169	-214	- 244	-164	- 355	-148	-277	- 14	-104
20. Net Cash Flow	710	48	- 414	863	- 13	-196	474	360	- 332	2,115	320	8,008	1,099

SOURCE: Farm Survey Data and Barrett, et al. [1981].

TABLE 5-23

Monthly Cash Flow Statement for ANTRAC Households, 1978-1979

Cash Flow Item	May 1-May 28, 1978	May 29-June 25	June 26-July 23	July 24-Aug. 20	Aug. 21-Sept. 17	Sept. 18-Oct. 15	Oct. 16-Nov. 12	Nov. 13-Dec. 10	Dec. 11-Jan. 7, 1979	Jan. 8-Feb. 4	Feb. 5-Mar. 4	Mar. 5-Apr. 1	Apr. 2-May 30, 1979
Crop Production													
1. Value of Sales	645	1,849	552	454	757	409	690	487	2,469	776	704	3,476	751
2. Non-ANTRAC Inputs	-1,173	- 620	- 829	- 676	- 166	- 168	- 178	- 65	- 37	- 53	- 25	- 54	- 190
3. ANTRAC Related Current Cash Expenses	-1,147	- 394	- 378	- 119	- 121	- 58	- 109	- 310	- 170	- 105	- 239	- 223	- 215
4. ANTRAC Related Revenues	59	176	221	39	26	35	24	89	142	18	21	60	60
5. Net Cropping Cash Revenue	-1,616	1,011	- 434	- 302	496	218	427	201	2,404	636	461	3,259	406
6. Major Food Purchases	-4,274	-2,958	-1,909	- 743	- 452	- 517	- 707	-1,874	-1,187	- 807	-1,046	-1,503	-1,476
7. Net Cropping Cash Surplus	-5,890	-1,947	-2,343	-1,045	44	- 299	- 280	-1,673	1,217	- 171	- 585	1,756	-1,070
Livestock Raising													
8. Revenues	1,559	5,048	6,907	681	7,799	11,122	2,236	19,134	9,760	2,011	1,159	2,643	8,214
9. Expenditures	-3,021	-4,433	-4,300	-3,763	-6,112	- 5,676	-7,107	-7,081	-3,662	-3,162	-5,576	-4,866	-3,570
Agricultural Trading													
10. Revenues	307	2,023	928	303	156	707	467	1,526	951	36,046	1,173	14,807	3,496
11. Expenditures	- 667	- 178	- 471	- 489	-1,180	-18,707	-2,652	-3,203	- 528	-8,234	- 741	-4,691	-1,388
Agricultural Transformation and Gathering													
12. Revenues	145	697	286	132	613	270	466	468	505	436	621	1,190	1,307
13. Expenditures	- 240	- 452	- 397	- 177	- 665	- 449	- 300	- 399	- 377	- 468	- 489	- 630	- 324
Other Sources of Income													
14. Revenues	2,515	3,551	2,634	4,019	3,667	4,733	3,062	2,903	1,730	2,215	3,913	3,050	2,263
15. Expenditures	- 896	- 742	-1,835	-2,955	-1,355	- 1,061	-3,628	-1,374	- 129	- 693	-1,682	- 754	- 987
Capital Expenditures													
16. Non-ANTRAC Equipment Purchased	- 14	- 4	0	- 9	- 18	- 57	- 33	- 29	- 7	- 20	- 11	- 15	0
17. ANTRAC Equipment Purchased	- 172	- 596	- 475	- 98	- 464	- 59	- 8	0	- 41	- 1	- 4	- 65	- 303
Credit													
18. Borrowing and Reimbursements Received	149	346	312	272	448	2,704	1,601	715	196	286	606	246	533
19. Loans and Repayments	-1,324	- 826	-1,662	- 573	- 432	- 654	-1,610	-1,523	-1,505	-2,597	-1,751	-1,633	-1,466
20. Net Cash Flow	-7,549	2,487	- 415	-3,702	2,501	- 7,426	-7,786	9,464	8,110	25,648	-3,367	11,038	6,705

SOURCE: Farm Survey Data and Barrett, et al. [1981]

Table 5-22 shows the monthly cash flow statement for TRAD households. The net cash flow position is low throughout the year except during the post-harvest time (i.e., mid-November through end of April and early May). Production input cash expenses occur during the growing months (May through August) but at a level so low that they barely affect net cash cropping income which, on the average, remains positive. The latter part of the May through August period corresponds to what is generally known as the "hungry season" and one would expect food purchases to occur during that time as shown in Table 5-22. These major food grain purchases result in a cash deficit in the same period which is covered by sales of animals, other minor crops and by other income sources.

While the above monthly cash flow pattern is typical of TRAD households, Table 5-23 presents a different picture for ANTRAC. The net monthly cash flow fluctuates more for ANTRAC farmers than for TRAD households. The major reason for this fluctuation is the ANTRAC-related cash costs. The cash deficit becomes relatively substantial when the food purchases of the May-July period are subtracted from the net cropping revenue.

A major implication of this highly variable cash flow position is that ANTRAC farmers have to find other means to cover cash flow deficits including generating revenue from off-farm activities such as animal carting, off-farm employment during the dry season, liquidating livestock and borrowing in the informal credit system. Thus, alternative ways have to be sought to improve ANTRAC farmers' cash flow position. This can be achieved by increasing cropping revenues (such as the introduction of cotton), a restructuring of the terms

of the medium term credit program. Furthermore, since farmers do not have access to formal consumption credit, and the technological package is not clearly profitable at this stage, a disturbing implication is that the current ANTRAC program is likely to be adopted by the relatively wealthier farmers with alternative sources of income to meet the cash flow deficit problem during the first three to five years of the program [Barrett, et al., 1981].

6. Equity Issues in the Eastern ORD Credit Program

It has been repeatedly reported that many credit programs in the Third World have primarily benefited rich farmers and have contributed to widening income inequality. A method usually employed in research on equity problems consists of stratifying borrowers by size of farm or income, and examining the relative share of loanable funds obtained by each class. Another method consists of analyzing the distribution of loanable funds relative to the distribution of borrowers (e.g., 90 percent of all loan funds going to the top 10 percent of large borrowers). But in examining equity issues in the Eastern ORD credit program several caveats are in order. First, loans are provided in kind in contrast to cash lending institutions where large farmers often borrow beyond their needs and use the excess cash for other investments such as urban housing. Second, there is not a large difference in acreage between small and large farmers in the Eastern ORD. Third, our survey results revealed that both farmers with small and large acreages are relatively poor by virtually all standards. Thus, the use of the term "rich farmers" is only valid in relative terms. Fourth, ANTRAC farmers in our

sample were purposively chosen to study the impact of ANTRAC technology from an established group of users. For these reasons it is difficult to analyze the impact of animal traction on equity questions such as income distribution and employment.

Despite the foregoing difficulties in dealing with equity issues in research on the Eastern ORD credit program there is some evidence from our surveys that the ANTRAC technology is likely to be adopted by relatively well off farmers who can bear the financial risk of the package and can generate off-farm revenues to cope with the cash flow problem inherent in the present ANTRAC package. Additional evidence supporting the hypothesis that only relatively wealthy farmers would participate in the medium term credit program is that virtually all ANTRAC villages are active commercial centers. This fact is dramatically illustrated for example, in the case of two villages which are about seven miles apart. While animal traction is widespread in the commercially active village of Diapangou, there are only a couple of ANTRAC farmers in the commercially inactive and isolated village of Tilonti.

Other indicators which show that the average ANTRAC farmer is wealthier than the average TRAD farmer include the value of animal sales, and revenue generated from off-farm activities. Off-farm income is crucial for meeting the cash flow problem--especially in years three and four--of ANTRAC farmers. In the Diapangou zone, 44 percent of ANTRAC farmers had over 20,000 CFA in total value of animal sales and animal products as compared with only 29 percent for TRAD farmers. Likewise in the Ougarou zone 61 percent of ANTRAC farmers each received over 20,000 CFA from the sale of animals and

animal products as compared with about 6 percent for TRAD farmers. ANTRAC farmers also earned more off-farm employment revenue than TRAD farmers. In the Logobou zone, for example, 79 percent of ANTRAC farmers earned over 20,000 CFA in off-farm employment revenue as compared with about 24 percent for TRAD farmers. Likewise in the Ougarou zone where 29 percent of ANTRAC farmers made over 20,000 CFA in off-farm revenue as compared with zero percent for TRAD farmers.

Other indicators of wealth in rural areas include a number of items such as radios, motor bikes, kerosene lamps, tin roofs, etc. The survey revealed, for example, that about 25 percent of ANTRAC farmers possessed at least one motor bike as compared with 2 percent for TRAD farmers. Also 61 percent of ANTRAC farmers had at least one radio as compared with 18 percent of TRAD farmers. About 91 percent of ANTRAC farmers had at least one kerosene lamp as compared with 51 percent of TRAD farmers.

In summary our research findings suggest that the average ANTRAC farmer is relatively wealthier than the average TRAD farmer. This is understandable when one realizes that the risk increases substantially as farmers move from hand to donkey or oxen cultivation and that the cash flow problem in years three and four of oxen cultivation is so severe that it requires--on the average--off-farm revenue in order for the ANTRAC household to survive.

7. Summary

This chapter has assessed the performance of the Eastern ORD credit system according to the following criteria: (1) the efficiency of the EORD credit delivery system; (2) prepayment performance;

(3) the degree of farmers' understanding and perception of the credit program; (4) the impact of credit on production and income; and (5) equity effects.

The economy of rural Eastern Upper Volta is basically a subsistence economy. The degree of monetization is extremely low by West African standards. For example, the percentage of crop production sold by sampled households varies from 8 to 15 percent and the use of modern inputs such as improved seeds, fertilizers, insecticides and the employment of hired labor remain at an extremely modest level. The bulk of the labor is primarily used to produce the two staple food crops--millet and sorghum--for family consumption.

A significant finding of this study is the extent to which poverty is pervasive in the Eastern Region of Upper Volta. Per capita net household income is extremely low for both ANTRAC and TRAD farmers. The average net household income per person for TRAD farmers was 13,255 CFA and 11,669 CFA for ANTRAC farmers in 1978-79. But the adverse effects of the drought on donkey farmers should be taken into consideration.

The survey revealed that there are a number of problems in coordinating the EORD credit delivery system both at headquarters and in the field. This lack of coordination has resulted in untimely delivery of both traction equipment and draft animals, poor training, and incomplete equipment packages for farmers. These shortcomings are demonstrated in the finding that 38 percent of farmers did not use their traction package during the first year.

Since ORD's officials assume that about 10 percent of the total operating budget of the ORD is allocated to the credit program, we

estimate that the real cost of the ORD lending program is about 25 percent of the total loan portfolio outstanding over the 1977-80 period. Given that the nominal interest rate is 5.5 percent, it is estimated that the level of subsidy is 19.5 percent if depreciation of buildings and equipment, losses due to default and inflation are excluded. The major causes of the high real cost of lending are associated with high transportation costs of delivering animal traction equipment and other inputs to farmers in remote areas.

The results of the farm survey revealed that actual interest rate charged farmers for short term credit was 7.69 percent rather than the official 5.5 percent nominal interest rate because farmers are forced to repay slightly higher prices for inputs than necessary to cover nominal interest charges. The actual interest rate for short term credit was even higher in those instances where farmers repaid their loans before the 12-month period.

There are numerous transaction costs for farmers who use the credit program. These invisible costs include such things as the time involved in traveling three to five times to apply for a loan. When the opportunity cost of time spent in applying for loans is added to the actual interest charges, the real cost of borrowing was estimated to be 12.31 percent a year for short term credit borrowers. The rate was even higher in cases where farmers repaid their loans before 12 months.

Our study revealed that the repayment of loans over the last 4-year period has been poor. For short term credit, for example, the collection ratio (i.e. ratio of the volume of loan collection to the volume of amount due), excluding repayment of arrears, declined from 78.4 percent in 1976-77 to 31.8 percent in 1979-80. The collection

ratio for medium term credit improved from 37.8 percent in 1976-77 to 54.2 percent in 1977-78, but the rate declined to 34.0 percent in 1978-79 and 21.5 percent in 1979-80.

· The study revealed that deficiencies in the ORD's credit delivery system accounted for 37 percent of all cases of loan delinquency. Farmers were also responsible for 37 percent of loan delinquency cases due to unwillingness to repay. Various natural causes (drought, death or sicknesses of farmers and draft animals) accounted for 26 percent of all cases of loan delinquency. A substantial number of farmers considered the ORD loans to be a one time deal and the ORD collection procedures as being soft compared with the methods used by private lenders to insure repayment.

Although the majority of farmers understood the objective of the credit program, the study revealed that a substantial number still did not understand the terms or the cost of their loans. For example, 47 percent of all short term loan borrowers did not know they had to repay their loans in 12 months. Also 60 percent of all medium term borrowers did not know the value of their loan package.

The survey indicated that only 2.3 percent of farmers thought that the ORD's low interest rate was an important advantage. Other advantages of the ORD credit program include payment by installment, precise time period for repayment and longer repayment period, etc. Thus, the nominal interest rate does not seem to be a critical variable in determining whether farmers participate in the credit program. This may also indicate that farmers consider other variables such as time involved in obtaining a loan, perceived profitability and risk of the technological package to be more important than the nominal

interest rate.

The survey has shown that the ANTRAC program is not performing as anticipated. First, on technical grounds, only donkey farmers have achieved a higher acreage effect per actif (i.e. 18.8 percent) than TRAD farmers. The 3.1 percent difference in acreage effect between oxen farmers and TRAD farmers is not statistically significant. In terms of yield effect, there was no difference in sorghum and millet yields between TRAD and ANTRAC farmers. Only corn yields in all zones and groundnut yields in oxen zones were statistically higher for ANTRAC than for TRAD farmers. But since one-half of the donkey sub-sample was severely affected by the drought of the 1978-79 growing season, this may have accounted for this poor performance.

Second, on economic grounds, all efficiency measures have shown that there was no significant difference between ANTRAC and TRAD farmers. Although oxen farmers had higher net crop production revenue per actif and per hectare than TRAD farmers in oxen zones, these differences were modest. For donkey traction, the effects of the drought have made it practically impossible to draw any meaningful conclusions. The overriding finding is that the Eastern ORD medium term credit impact has had a marginal impact on production and an insignificant increase in income of ANTRAC farmers during the 1978-79 agricultural season.

The study revealed that ANTRAC farmers were experiencing major cash flow problems. An important implication of both annual and monthly cash flow deficits for ANTRAC farmers in the 1978-79 crop season is that they had to find other means to cover these deficits. Alternative sources of liquidity included borrowing in the informal

credit system, liquidating assets such as livestock and cash generated from off-farm employment.

An overall conclusion based on data for the 1978-79 growing season is that animal traction has not contributed in any significant degree to the improvement of the welfare of the Eastern ORD farmers. Both agricultural production and income of ANTRAC farmers have increased only modestly even though the "best" traction farmers were purposively selected for our survey. But in all fairness to the ANTRAC performance, it should be stressed that the ORD's ANTRAC program is relatively young and most of these traction farmers are still learning how to use the ANTRAC package. The full range of traction equipment has still not been adopted by the majority of ANTRAC farmers and supporting services are yet to be developed and disseminated in the countryside (spare part supplies, veterinary care, feeding stuff, etc.). Plowing is the most common activity performed with ANTRAC, while ridging and the very critical task of weeding, are still done by hand.

It was difficult to measure the equity effects of the credit program for the following reasons: first, the farmers are extremely homogenous in terms of size of farm and other physical characteristics; second, both small and large farmers are poor in absolute terms by virtually all international standards; and third, the "best" ANTRAC farmers were purposively chosen for the study of the impact of ANTRAC technology. But some survey evidence indicates that the ANTRAC technology is likely to be adopted by relatively well-off farmers who can generate off-farm revenues to cope with the cash flow problem. For example, in the Logobou zone, 79 percent of ANTRAC farmers earned over

20,000 CFA on the average in off-farm activities as compared with about 24 percent for TRAD farmers. Likewise in the Ougarou zone, 29 percent of ANTRAC farmers made over 20,000 CFA on the average in off-farm revenue while not a single TRAD farmer earned over this amount. Moreover, in comparing the number of consumer durables such as radios, motorbikes, kerosene lamps, tin roofs, etc., the survey revealed that 25 percent of ANTRAC farmers owned at least one motorbike as compared with 2 percent of TRAD farmers. Also 61 percent of ANTRAC farmers possessed at least one radio as compared with 18 percent of TRAD farmers.

In conclusion, the research findings show that the average ANTRAC farmer is relatively wealthier than the average TRAD farmer and that there is a large financial risk involved in shifting from hoe technology to ANTRAC technology. Furthermore, the survey results revealed that ANTRAC farmers had a cash flow problem and many farmers relied on off-farm revenue to cover cash deficits.

CHAPTER VI

DESCRIPTION OF THE INFORMAL CREDIT SYSTEM IN RURAL EASTERN UPPER VOLTA

The objective of this chapter is to describe the informal credit system in the Eastern ORD with emphasis on the number and value of both cash and in-kind credit transactions, the purpose and conditions of loans, the sources of borrowing[1] and the beneficiaries of loans granted.

The data for this chapter are drawn from the results of the 1978-79 farm level survey and five credit questionnaires which were administered to both ANTRAC and TRAD farmers during the same year.

1. Lending in the Informal Credit System

In this section the number and value of cash and in-kind loans will be discussed. In addition, the conditions and terms under which these transactions were agreed upon will be explored as well as the beneficiaries of both loans in cash and in kind.

1.1 Cash Loans

For the entire sample of 480 TRAD and ANTRAC farmers, Table 6-1 shows that these farmers extended 544 loans in cash for an overall value of 1,702,505 CFA during the May 1, 1978 to April 30, 1979

[1] To avoid confusion the term "borrowing" will be used for loans received, while the term "loans" will be used for loans extended.

TABLE 6-1

Distribution of the Number and Annual Value of Cash Loans
Granted by Household and by Zone, 1978-1979

Zone	Number of Households		Number of Loans		Total Value of Loans Given (CFA)		Average Loan Value[a] (CFA)		Average Loan Value Per Household[b] (CFA)	
	TRAD	ANTRAC	TRAD	ANTRAC	TRAD	ANTRAC	TRAD	ANTRAC	TRAD	ANTRAC
Bogandé	36	--	19	--	33,200	--	1,747	--	922	--
Mani	36	--	28	--	63,700	--	2,275	--	1,769	--
Piela	18	18	1	4	1,000	3,825	1,000	956	55	212
Diabo	18	53	4	39	25,500	181,000	6,375	4,641	1,417	3,415
Logobou	36	18	82	45	146,250	115,550	1,783	2,568	4,062	6,419
Partiaga	36	--	50	--	138,325	--	2,766	--	3,842	--
Yondé	35	--	10	--	63,075	--	6,307	--	1,802	--
Diapangou	18	18	18	71	33,475	418,700	1,860	5,897	1,860	23,261
Botou[c]	37	--	42	--	92,675	--	2,206	--	2,505	--
Kantchari	35	--	28	--	125,750	--	4,491	--	3,593	--
Ougarou	18	18	6	60	12,100	200,050	4,783	3,334	672	11,114
Pama	32	--	37	--	48,330	--	1,306	--	1,511	--
Total All Zones	355	125	325	219	783,380	919,125	2,410	4,197	2,207	7,353

SOURCE: Farm Survey Data, 1978-79.

[a]Average loan value = Total loan value ÷ Total number of loans.

[b]Average loan value per household = Total loan value ÷ Number of households.

[c]North of Fada

survey period. The average number of loans per household was found to be one for TRAD farmers and two for ANTRAC farmers. The average number of loans extended is generally higher in ANTRAC zones than in TRAD farming areas. In terms of value Table 6-1 shows that the 919,125 CFA lent by ANTRAC farmers is higher than the 783,380 CFA lent by TRAD farmers. The average size of loan is 4,197 CFA for the ANTRAC sample whereas it is only 2,410 CFA for the TRAD sample. Moreover, Table 6-1 also shows that the average value of loans extended per ANTRAC household is more than three times higher than that of the TRAD household in every zone where both types of farmers are present.

The survey also revealed that in most cases the terms of the loans were not specified at the time of the loan transaction. Only 21 percent of the total number of all loans have specified repayment terms ranging from one month to twelve months; 25 percent are due at harvest and 55 percent have unspecified terms. It is therefore difficult to classify these loans as short or medium term. But since almost half of the total number of loans have to be repaid within a year they can be classified as short term loans according to the ORD definition.

The recipients of the loans are shown on Table 6-2. Of the 544 loans, 66 percent were received by persons living in the compound or in the village; 34 percent were extended to people outside the village. Table 6-3 shows that a total of 40 percent of the loans were given to relatives as compared with 60 percent to non-relatives.

TABLE 6-2

Number and Value of Cash Loans Granted by Farmers
by Category of Recipients

	TYPE OF RECIPIENTS				
	Persons in the Compound	Persons in the Village	Persons Outside the Village	Small Trader Outside the Village	Total
Number of Loans	27	334	182	1	544
Percentage	4.9	61.4	33.5	.2	100
Value of Loans (CFA)	36,430	812,850	851,225	2,000	1,702,505
Percentage	2.1	47.8	50.0	.1	100
Average Loan (CFA)	1,349	2,434	4,677	2,000	3,130

SOURCE: Farm Survey Data, 1978-79.

TABLE 6-3

Number and Value of Cash Loans Granted by Farmers
to Relatives and Non-Relatives

	Relatives	Non-Relatives	Total
Number of Loans	219	325	544
Percentage	40.3	59.7	100
Value of Loans (CFA)	510,630	1,191,875	1,702,505
Percentage	30.0	70.0	100
Average Value of Loan (CFA)	2,332	3,667	3,130

SOURCE: Farm Survey Data, 1978-79.

1.2 Loans in Kind

Turning to loans in kind, the survey revealed that the number of loans in kind were only one-sixth the number of loans in cash extended by farmers in the survey. The results in Table 6-4 show that the number of farmers in the sample extended a total of 89 loans in kind during the 1978-79 survey year. Ninety-three percent of the loans were extended in the form of agricultural products and the remaining 7 percent in animals. Also, nearly three-fourths of all loans in kind were extended in the form of food grain (millet, sorghum and corn).

The terms of these loans in kind were not clearly specified. For example, 55 percent had to be repaid at harvest, 12 percent in less than a year, and 33 percent had no time limit. Further, 85 percent of all loans in kind have to be repaid in kind, and the rest in cash.

The localized nature of informal lending is highlighted by the fact that 79 percent of these loans went to people in the village and only 21 percent were extended to people outside the village. In addition, the majority of the beneficiaries of these loans are relatives (57 percent).

In summary, the survey of informal credit revealed that most loans in kind were extended to people within the village and over one-half of those were extended to relatives. Food grains are the most important commodities in these in-kind lending transactions. Hence, in-kind lending would seem to be predominantly a social activity of mutual assistance at the village level. As in all transactions of this nature in rural areas, there is no written agreement. There

TABLE 6-4

Number of Loans in Kind Granted by Farmers by Type of Commodity

Type of Commodity	Number	Percentage
Millet/Sorghum	59	66.3
Peanuts	9	10.1
Corn	6	6.7
Other Minor Crops	9	10.1
Sheep and Goats	3	3.4
Poultry	3	3.3
Total	89	100.0

SOURCE: Farm Survey Data, 1978-79.

is just an oral arrangement between lender and borrower; this explains perhaps why a precise date for repayment is often not specified in advance.

2. Borrowing from the Informal Credit System

This section deals with both borrowing in cash and in kind. The number, value and terms of cash borrowings will be examined as well as the purposes for which farmers borrow.

2.1 Borrowing in Cash

Table 6-5 shows that the total amount of borrowings is not only small in absolute value (427,275 CFA) but is also much lower than the value of cash loans reported earlier (1,702,505 CFA).[1] Also, the number of 162 cash borrowings is much lower than the 544 cash loans extended by farmers.

Clearly there is a certain degree of underestimation as to both the number and value of borrowings. This outcome led the writer to hypothesize that farmers were more open about loans extended and more reluctant to talk about their borrowings. The reason why one may think that Eastern ORD farmers would behave that way is that there may be a certain pride associated with lending to others (i.e., to be of service to fellow farmers); whereas borrowing is considered shameful or disgraceful as was seen before. In a

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[1] A borrowing of 300,000 CFA obtained by a farmer (a war veteran) in the Diabo zone to purchase a mill was excluded from the analysis. This atypical transaction took place outside the Eastern Region.

separate one-shot questionnaire[1] designed to cross check, among other things, the quality of the results, this hypothesis was empirically supported. For example, it was found that 46 percent of household heads were more open about their lending transactions whereas 37 percent said they were less reluctant to talk about their borrowings. Another 12 percent would not talk about either the loans given or borrowings. Only 3 percent were not reluctant to talk about both types of transactions. Although it is apparent that both kinds of credit transactions are underestimated, borrowings from informal lenders seem to be more underestimated than loans extended.

Table 6-5 shows the distribution of the number and value of borrowings broken down by ANTRAC and non-ANTRAC households and by zone. There is a substantial difference between the overall mean borrowing value of the ANTRAC sample and that of the TRAD sample (4,164 CFA compared with 2,398 CFA). But the average value of borrowing per household is lower for the ANTRAC than for traditional farmers (733 CFA compared with 945 CFA).

The average borrowing is not only small in absolute terms for both ANTRAC and TRAD farmers, but also substantially lower than their respective average loan. For example, ANTRAC farmers' average borrowing is 773 CFA while their average loan is 7,353 CFA. Likewise TRAD farmers' average borrowing is 945 CFA as compared with an average loan extended of 2,207 CFA.

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[1]This special survey deals with farmers' attitudes toward savings, credit and related issues. Results will be analyzed in the next chapter.

TABLE 6-5

Distribution of the Number and Annual Value of Cash Borrowings
by Household and by Zone, 1978-1979

Zone	Number of Households		Number of Cash Borrowings		Total Value of Borrowing (CFA)		Average Value of Borrowing[a] (CFA)		Average Value of Borrowing Per Household[b] (CFA)	
	TRAD	ANTRAC	TRAD	ANTRAC	TRAD	ANTRAC	TRAD	ANTRAC	TRAD	ANTRAC
Bogandé	36	--	6	--	13,000	--	2,167	--	361	--
Mani	36	--	8	--	22,350	--	2,794	--	621	--
Piela	18	18	1	1	7,500	7,300	7,500	7,300	417	405
Diabo	18	53	5	8	15,500	17,250	3,100	2,156	861	243
Logobou	36	18	27	7	32,650	29,000	1,209	4,141	960	1,611
Partiaga	36	--	33	--	70,675	--	2,142	--	1,963	--
Yondé	35	--	3	--	8,000	--	2,667	--	229	--
Diapangou	18	18	11	5	65,500	34,050	5,954	6,810	3,639	1,892
Botou[c]	37	--	9	--	26,100	--	2,900	--	705	--
Kantchari	35	--	6	--	9,800	--	1,633	--	280	--
Ougarou	18	18	13	1	19,000	4,000	1,462	4,000	1,056	222
Pama	32	--	18	--	45,600	--	2,533	--	1,425	--
Total All Zones	355	125	140	22	335,675	91,600	2,398	4,164	945	733

SOURCE: Farm Survey Data, 1978-79.

[a]Average borrowing value = Total value of borrowing ÷ Number of borrowings.

[b]Average value of borrowing per household = Total value of borrowing ÷ Number of households.

[c]North of Fada

On the average, ANTRAC farmers lent substantially larger amounts of cash than they borrowed (i.e., net lenders). But the difference between the average loan value and the average borrowing value is much less for TRAD farmers than that prevailing in the case of ANTRAC farmers' credit transactions. The ratio of the average borrowing to the average loan is one to ten for ANTRAC farmers whereas it is only one to two for TRAD farmers. Since there are good reasons to believe that borrowing transactions were relatively more underestimated than lending transactions, it cannot be clearly and unambiguously stated that TRAD farmers are net lenders.

Table 6-6 shows that over two-thirds of all borrowed funds came from within the village and that fellow farmers contributed over 50 percent of the total amount. Further, 60 percent of all borrowed money originated from relatives both inside and outside the village.

An important question in this study of the informal credit system is why do farmers borrow? Table 6-7 presents the distribution of borrowed funds by purpose. Nearly 29 percent of all borrowed funds are used to meet various family expenditure requirements. About 19 percent is utilized to buy food, while ceremonies and feasts account for 12 percent. Trading accounts for 13 percent of all cash loans.

An important finding is that borrowing for production purposes is insignificant. Only three borrowings representing 0.4 percent of all borrowed funds were used to buy productive inputs. Perhaps a good explanation for this situation is the fact that the value of capital assets is extremely low in traditional hoe farming. This finding

TABLE 6-6

Sources of Borrowed Funds Received by Sample Households

	Sources of Borrowed Funds					
	Compound Members	Other Farmers in the Village	Traders in the Village	Other People Outside the Village	Traders Outside the Village	Total
Number of Borrowings	18	92	6	44	2	162
Percentage	11.1	56.8	3.7	27.2	1.2	100
Value of Borrowings (CFA)	37,425	222,150	18,100	147,700	1,900	427,275
Percentage	8.8	52.0	4.2	34.6	.4	100

SOURCE: Farm Survey Data, 1978-79.

TABLE 6-7

Use of Borrowed Funds by Purpose

	Household[a] Expenses	Food Purchases	Ceremonies and Feasts	Trading	Taxes	Non-Agric. Activities	Gifts	Repayment of Debts	Productive Inputs	Others[b]	Total
Number of Borrowings	39	33	19	13	14	9	9	3	3	20	162
Percentage	24.1	20.4	11.7	8.0	8.6	5.5	5.5	1.8	1.8	12.3	100
Value of Borrowings (CFA)	122,875	79,650	51,000	55,600	33,200	26,500	12,500	2,700	1,700	41,550	427,275
Percentage	28.8	18.6	11.9	13.0	7.8	6.2	2.9	.6	.4	9.72	100

SOURCE: Farm Survey Data, 1978-79.

[a]Household expenses include funerals, weddings, clothing, etc.

[b]Others include invitation for field work, purchase of animals, etc.

addresses the question of whether informal credit substitutes for formal credit programs for increasing agricultural production. It appears that there is no alternative but to rely on a formal ORD credit program for the purchase of agricultural inputs.

Table 6-8 shows that the percentages of borrowed funds allocated to various purposes are fairly similar for both ANTRAC and TRAD farmers. But the percentage of borrowed cash used in trading is higher for ANTRAC farmers (20.2 percent) than for TRAD farmers (11.1 percent). More importantly, the percentage of borrowed funds allocated for food purchases is higher for TRAD farmers (20 percent) than for ANTRAC farmers (14 percent).

It was also found that TRAD farmers, unlike ANTRAC farmers used borrowed funds for gifts, repayment of debts, productive inputs and invitation for field work.[1] Although the amounts of borrowed funds involved for these purposes are small (5.4 percent of all borrowed funds) this may constitute another evidence supporting the conclusion that ANTRAC farmers were richer than TRAD farmers.

The survey revealed that the terms of repayment of cash borrowed from informal lenders were not well specified in most cases. Thus, 35 percent of the loans received in cash did not have specific terms for repayment, while 34 percent were to be repaid at harvest. Only 30 percent had precise terms of repayment ranging from one month to five months.

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[1]At times, when a farmer has difficulties weeding his field, for example, he may invite fellow farmers to help him out. During this field work invitation, which is reciprocal in nature, food and/or local beverages are served.

TABLE 6-8

Distribution of Borrowed Funds by Purpose and by ANTRAC/TRAD Households

	Household[a] Expenses	Food Purchases	Ceremonies and Feasts	Trading	Taxes	Non-Agric. Activities	Gifts	Repayment of Debts	Productive Inputs	Others[b]	Total
ANTRAC Households											
Value of Borrowings (CFA)	27,300	13,000	14,000	18,500	7,300	5,000	-	-	-	6,500	91,600
Percentage	29.8	14.2	15.3	20.2	7.9	5.5	-	-	-	7.1	100
TRAD Households											
Value of Borrowings (CFA)	95,575	66,650	37,000	37,100	25,900	21,500	12,500	2,700	1,700	35,050	335,675
Percentage	28.5	20.0	11.0	11.1	7.7	6.4	3.7	.8	.5	10.4	100

SOURCE: Farm Survey Data, 1978-79.

[a]Household expenses include funerals, weddings, clothing, etc.

[b]Others include invitation for field work, purchase of animals, etc.

In summary, cash borrowings from informal lenders were relatively small in number. As in the case of cash loans, most of the borrowed funds were received from people within the same village. Relatives are important sources of borrowed cash whereas private traders play a relatively more modest role than usually reported in the literature.[1] Further, among the various purposes for which farmers borrow, household needs accounted for about 50 percent of all borrowed funds, of which food items accounted for about one-fifth of total cash borrowings. TRAD farmers borrow proportionately more for food than ANTRAC farmers.

Although the percentages of borrowed cash are generally fairly similar for the various purposes for both ANTRAC and TRAD farmers (i.e., ceremonies and feasts, taxes and non-agricultural activities), the former borrow more for trading than the latter. It also appears that borrowing strictly for production purposes is unknown to ANTRAC farmers and insignificant for non-ANTRAC farmers (only 0.4 percent of total borrowed funds). Also, as was the case with cash loans, most borrowing transactions (66 percent) have no precise terms for repayment. Finally, of the 162 cash borrowings, 28 were expected to be repaid in kind. Of these 28, 26 were expected to be repaid with agricultural products and 2 with animals.

2.2 Borrowing in Kind

The number of borrowings in kind is relatively small as compared with the number of cash borrowings obtained from informal lenders. Only 34 of such credit transactions were recorded in the

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[1] See end of chapter for an explanation of this situation.

survey. Of these 34 transactions, ANTRAC farmers accounted for only 4, the balance going to TRAD farmers.

Over three-fourths of the number of all in-kind borrowings were obtained from within the village. Table 6-9 shows that other farmers in the village accounted for nearly two-thirds of these borrowings while small and large traders contributed for about 9 percent only. About 20 percent of all borrowings in kind came from outside the village. Further, 61.8 percent of all in-kind borrowing transactions took place between relatives.

The distribution of borrowings in kind by commodity and by purpose revealed that most borrowings were in the form of food grain--millet and sorghum--(over four out of five borrowings). The other borrowings were in the form of minor crops. Moreover, unlike ANTRAC farmers, TRAD farmers in addition to borrowing food grain for consumption, were also borrowing grain for planting, social events and gifts. This may further indicate that TRAD farmers are relatively poorer than ANTRAC farmers.

The terms of repayment of in-kind borrowings, like in other credit transactions, were unspecified for most cases. Thus, 58.8 percent of in-kind borrowings were due at harvest time while 26.5 percent did not have any terms at all. Only 4 transactions out of the 34 had specific terms between 1 and 7 months.

Another important fact is that the number of in-kind borrowings is much smaller than the number of in-kind loans. Only 34 in-kind borrowings were recorded as compared with 89 in-kind loans. This, again, is probably because farmers are more reluctant to disclose

TABLE 6-9

Number of Borrowings In Kind Received by Farmers by Source

	Sources of Borrowings in Kind					
	Compound Members	Other Farmers in the Village	Traders in the Village	Small Traders Outside the Village	Other People Outside the Village	Total
Number of Borrowers	3	21	3	1	6	34
Percentage	8.8	61.8	8.8	2.9	17.6	100

SOURCE: Farm Survey Data, 1978-79.

borrowing transactions than lending transactions since borrowing is perceived as being shameful.

3. Reliability of Data

One of the common problems of carrying out research at the farm level in Third World countries is the reliability of the data collected especially when these data are sensitive in nature such as information related to credit transactions. Based on the writer's prior experience in, and knowledge of, the Eastern region, the number as well as the value of loans extended is likely to be smaller than expected and, to a certain extent, underestimated. There are two major reasons for this phenomenon: (1) the sensitive nature of the information; and (2) the difficulty for enumerators to extract this kind of information. For example, in the Pièla zone, which is a relatively fairly well developed commercial center the number of loans recorded is clearly far below that which actually occurred. This is because the first enumerator was fired and the data for two entire periods were missing. Also, the enumerator who subsequently took over was relatively ineffective. In the Diabo zone, nine households had not been interviewed over a period of time ranging from two to seven periods.[1]

The second caveat is that the value of loans provided by ANTRAC households is relatively more important than those of TRAD households. This fact may be explained by several factors but the most important ones would seem to be the following: (1) the ANTRAC zones are also those which have intense commercial activities (Diapangou, Diabo, Logobou and Pièla); (2) it is likely that ANTRAC farmers were less

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[1]The entire survey year was divided into thirteen periods; each four weeks long.

reluctant (or more open) in disclosing their lending transactions due to their contact with the ORD; and (3) ANTRAC farmers are simply richer than TRAD farmers which would be additional evidence supporting the earlier finding that ANTRAC farmers were wealthier than TRAD farmers.

4. Summary

Lending and borrowing transactions in the informal credit system of rural Eastern Upper Volta are highly localized at the village level and involve relatively small sums of money. The average annual cash loan per household is 3,547 CFA whereas the average annual cash borrowing is 890 CFA. But, on the average, ANTRAC farmers lend more than they borrow (7,353 CFA versus 733 CFA). In addition, ANTRAC farmers lend more than TRAD farmers (7,353 CFA versus 2,207 CFA). ANTRAC farmers also borrow less than TRAD farmers (733 CFA versus 945 CFA).

The survey revealed that the main purposes for cash borrowings are to meet social obligations such as funerals, weddings, ceremonies and family expenses. The purchase of food is the single most important use of informal credit especially for TRAD farmers. Cash borrowing for trading, on the other hand, appears to be more important to ANTRAC farmers than it is to TRAD farmers. There is virtually no cash borrowing for securing agricultural inputs.

It was also found that the number of cash lending and cash borrowing transactions was higher than that of lending and borrowing transactions in kind. Thus, the number of cash loans granted and cash borrowings was 544 and 162, respectively, as compared with 89 loans in kind and 34 borrowings in kind.

Agricultural products, especially food grain, are the most important items involved in lending and borrowing in kind. TRAD farmers account for 88 percent of the number of borrowings in kind and over half of these borrowings are used to secure items for home consumption.

Most credit transactions are for mutual assistance among farmers and relatives at the village level with repayment expected but with no terms specified in most cases and when they are, they are generally for one to six months and never for more than a year. There are no formal conditions set at the time of the transactions. Relatives are important participants in these credit transactions. Strict commercial loans for production activities are negligible. In the final analysis, informal credit provides both cash and in-kind loans for unexpected socially required obligations and for consumption purposes.

The survey indicated that the role of private grain traders in the informal credit system was surprisingly modest. But as we pointed out earlier the volume and value of informal credit may be underestimated. In actual practice, private traders use some farmers living in the village to purchase grain from farmers.[1] Before harvest, and especially during the hungry season, grain traders intervene indirectly by lending cash to farmers through a number of farmer intermediaries with an agreed upon repayment in grain at harvest. In

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[1]Since borrower farmers were dealing with traders intermediaries who were farmers themselves, this explains why the role of traders appears very modest. The same situation prevails in the lending side where these intermediaries are given cash by traders to lend to farmers in exchange for grain at harvest. Given that the study was basically a farm level survey, traders were not included in the sample as such.

addition, some relatively well off farmers intervene by purchasing grain and paying for it in advance with delivery at a later time.

CHAPTER VII

ANALYSIS OF THE STRUCTURE AND PERFORMANCE OF THE INFORMAL CREDIT SYSTEM AND FARMERS' ATTITUDES TOWARD CREDIT AND SAVINGS

The objective of this chapter is to define the role and purpose of, and to analyze the structure and performance of the informal credit system with emphasis on the commercial segment. In addition, this chapter seeks to provide some insights into farmers' attitudes toward credit, availability of financial resources at the village level, investment alternatives and savings potential in Eastern Upper Volta.

This chapter is organized in five sections: the first section will seek, in light of the descriptive results of the preceding chapter, to define the role and purpose of the informal credit system. The second section will focus on the analysis of the structure of the informal credit system by examining the number of lenders who operate in both the commercial and non-commercial segments and the value of the transactions involved with special attention to the commercial part. The third section will provide an analysis of the performance of the informal credit system by (1) assessing the cost of borrowing including interest rates charged by commercial lenders and distance traveled to obtain loanable funds; and (2) assessing repayment performance and its implications in terms of the real cost of lending (level of risk and losses).

The fourth section will provide some insights into farmers' attitudes toward credit by drawing on attitudinal survey data on (1) farmers' perceptions and opinions about terms and interests charged on loans provided for various purposes; and (2) the measures taken to deal with delinquent borrowers in the informal credit system. The last section analyzes farmers' attitudes about investment and savings.

1. Role and Purpose of the Informal Credit System

1.1 Seasonal Patterns of the Value of Credit Transactions

To understand the seasonal patterns of credit transactions in the informal credit system, the following explanation may be advanced: during the post-harvest period, farmers sell part of their crops to meet cash expenditure requirements. As stocks start to dwindle over time, farmers begin to reduce crop sales as they have to keep a certain amount of food to carry them through the hungry season to the next harvest. During this period, some farmers start to experience a cash deficit. In addition, there are other farmers who, either because of a bad harvest or because they sold a higher proportion of their crop relative to their subsequent consumption needs[1] experience food shortage in the pre-harvest season. In both cases these farmers have no choice but to borrow either cash

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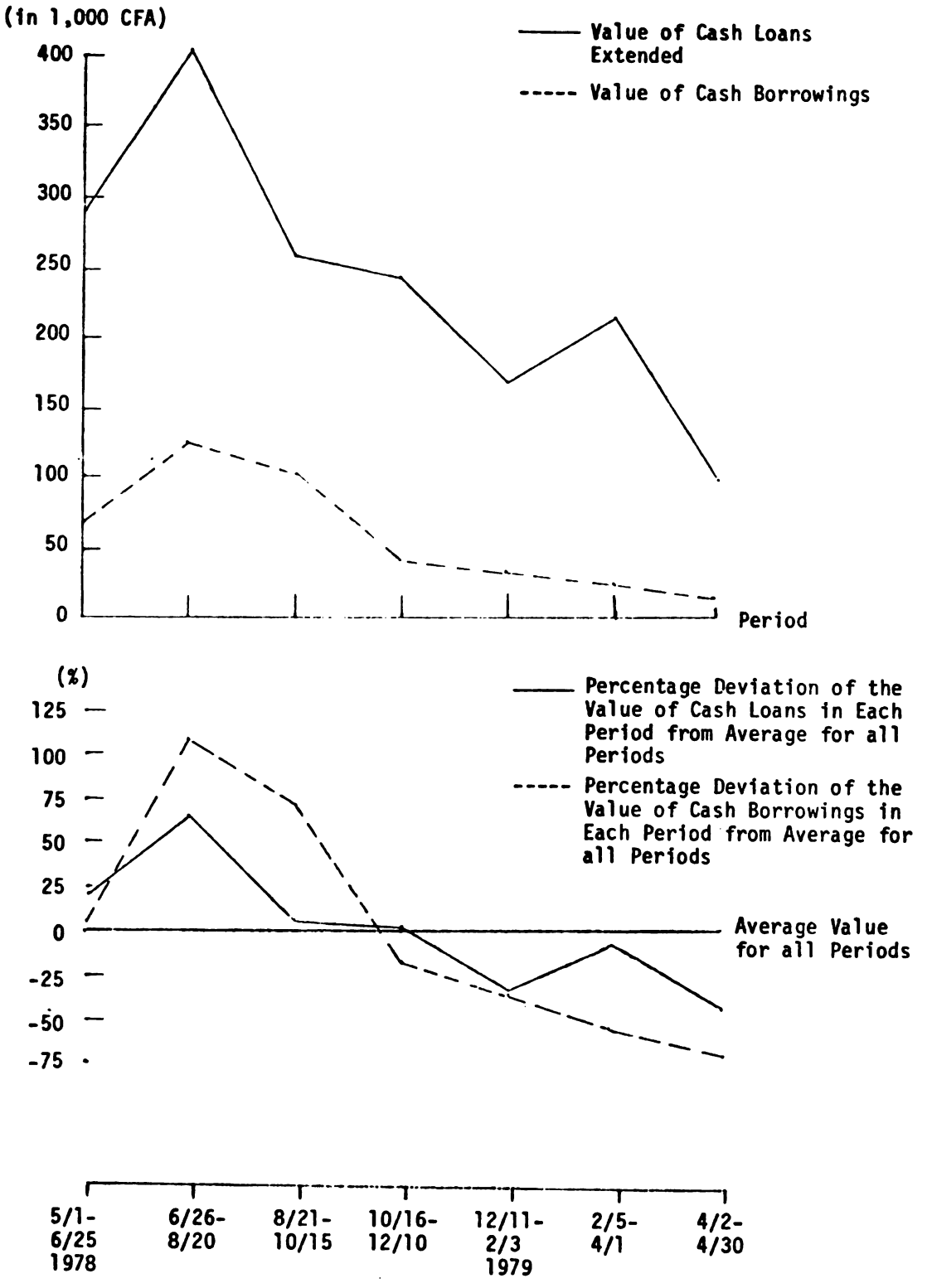
[1] In general, farmers are careful to keep enough food for the hungry season, but some social obligations are so demanding that food deficits may still occur. Also, some grain traders stated that they have to exercise restraints in setting purchase prices as some farmers tend to sell too much of their crop relative to their needs.

to meet unexpected social obligations, or food grain to cover their family consumption requirements. Thus, both cash and food deficit farmers would borrow from fellow farmers, richer farmers, relatives and traders to make up for their deficits, with repayment at a later time either in cash or in kind at harvest. Hence, borrowings are expected to be lower in the pre-harvest period, rising and peaking up in the hungry season, then slowing down again at harvest. Lending would follow the same patterns while repayments should be at a maximum during the harvest and immediate post-harvest periods.

In order to quantify the seasonal pattern of credit use, credit transactions for the 480 farmers in our 1978-79 survey were disaggregated by period of the year. Figure 7-1 shows the variation of the value of cash loans granted and cash borrowings over time. The value of cash borrowings is high during the hungry season between May and October. This period coincides with the time when farmers experience cash flow deficits. As was shown then, these deficits are covered by revenues from other non-agricultural activities and by borrowing in the informal credit system. The peak borrowing period of the year takes place in the hungry season of the July-August period. Furthermore, Figure 7-1 also indicates that the total value of loans follows the same pattern with a peak in the July-August period and a gradual decline thereafter.

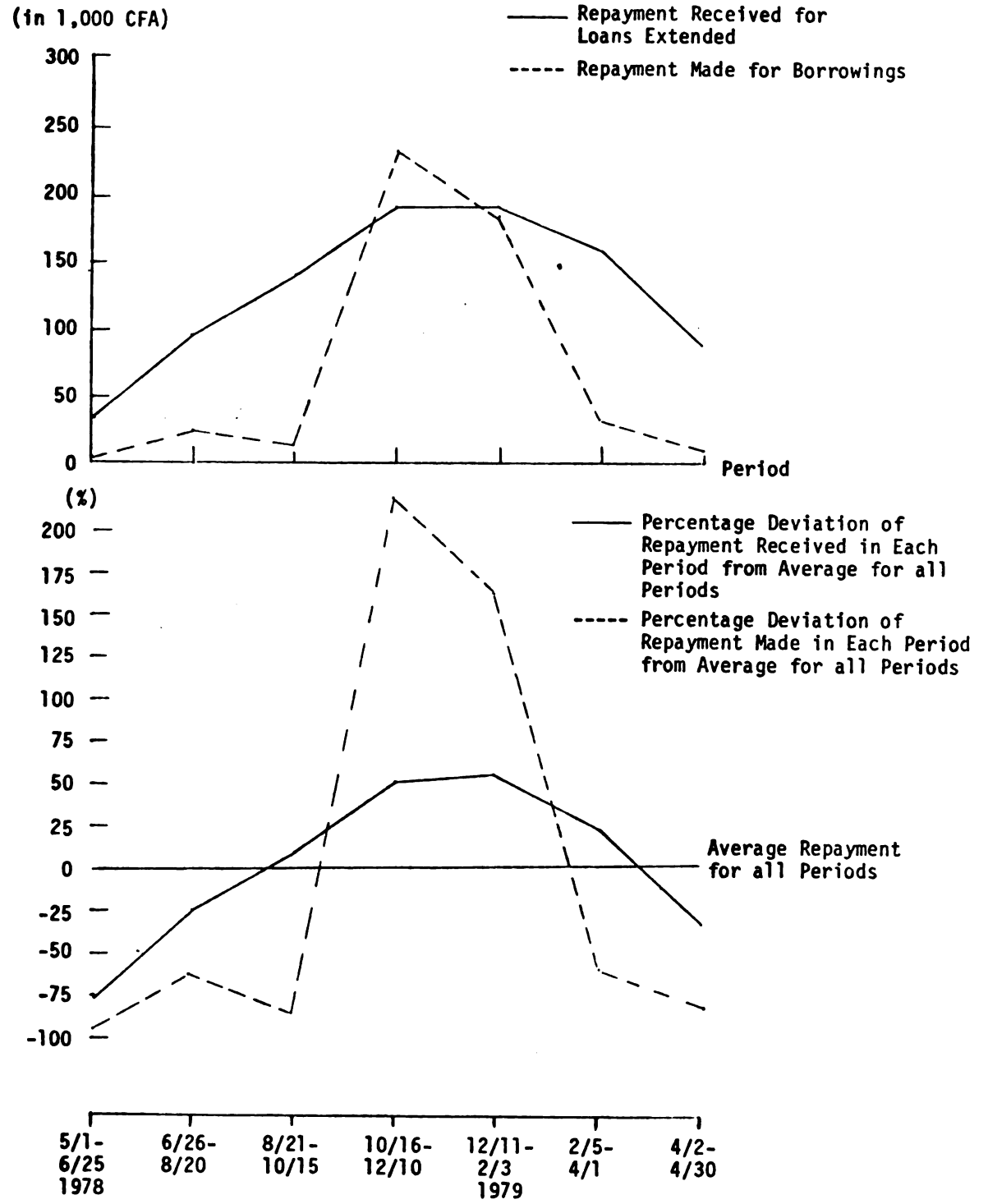
Figure 7-2 shows that the highest value of repayment is found in the November-March period with a peak in November through January corresponding to the harvest and immediate post-harvest season.



SOURCE: Farm Survey Data, 1978-79.

FIGURE 7-1

Seasonal Variations of the Value of Cash Loans and Cash Borrowings of Farmers



SOURCE: Farm Survey Data, 1978-79.

FIGURE 7-2

Seasonal Variations of Cash Repayment Received and Made by Farmers

1.2 Seasonal Variations in the Value of Borrowings for Various Purposes

The value of borrowings is broken down by purpose and by period on Table 7-1. Borrowings for food purchases are highest in July-August with about 50 percent of the value of borrowing for food purchases. The same table shows that there are no borrowings for food purchases in the immediate post-harvest period, i.e., December through April. The value of borrowings for trade is lowest in the same period, while the value of borrowings for non-agricultural activities is higher in the slack season of February-April.

The foregoing findings are consistent with the monthly cash flow statements for both ANTRAC and TRAD farmers in Chapter V. It was reported that the most important food purchases occurred during the May-August period which also corresponded with the cash flow deficit period. The problem of cash and food shortages is further illustrated by the fact that farmers borrow food grain during the hungry season. Figure 7-3 shows that the most important quantities of borrowed grains (66 percent) occurred between May and August, then declined from September through November.

The foregoing analysis has revealed that in general credit transactions are strongly influenced by the period of the year. At harvest, farmers sell their crops to meet various cash expenditure requirements. During this period, both lending and borrowing transactions are low and only repayments of debts take place during this period. As one moves away from the harvest and immediate post-harvest periods, both food grain stocks and cash on hand get more

TABLE 7-1

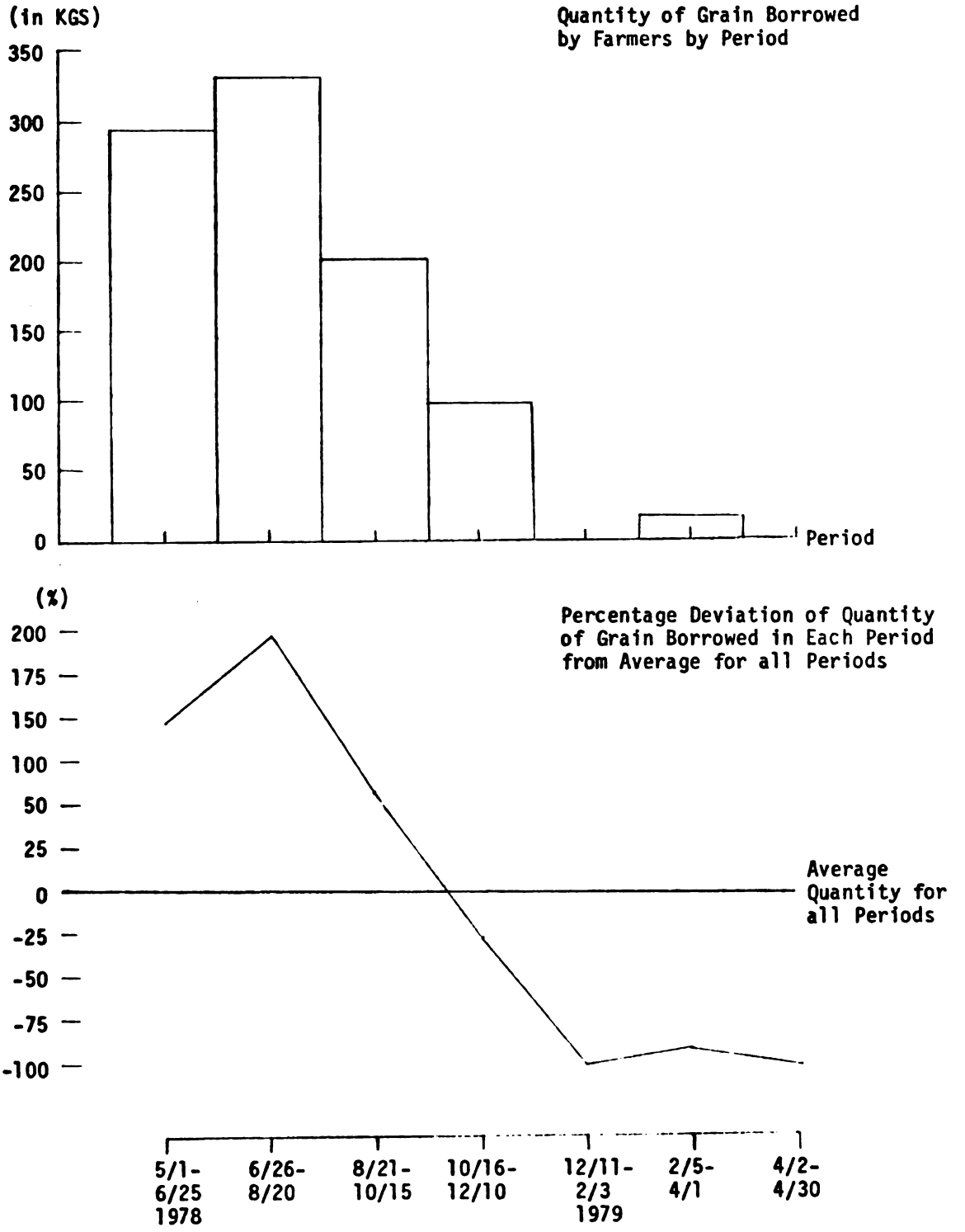
Eastern ORD: Total Value of Cash Borrowings in the Informal Credit System by Period and by Purpose

(in CFA)

Item	1 May 1- June 25	Per.	2 June 26- Aug. 20	Per.	3 Aug. 21- Oct. 15	Per.	4 Oct. 16- Dec. 10	Per.	5 Dec. 11- Feb. 3	Per.	6 Feb. 4- Apr. 1	Per.	7 April 2- April 30	Per.	Total Amount	Per.
Food Purchases	17,000	21.3	39,500	49.6	11,150	14.0	12,000	15.1	--	--	--	--	--	--	79,650	100.0
Taxes	4,500	13.5	7,300	22.0	--	--	2,300	7.0	11,200	33.7	7,900	23.8	--	--	33,200	100.0
Household Expenses	27,700	22.5	28.375	23.1	38,800	31.6	12,000	9.8	11,500	9.3	4,500	3.7	--	--	122,875	100.0
Feasts and Ceremonies	3,000	5.9	13,400	26.3	19,000	37.3	9,100	17.8	4,000	7.8	2,500	4.9	--	--	51,000	100.0
Trade	--	--	23,900	43.0	18,000	32.4	6,200	11.1	6,000	10.8	1,000	1.8	500	.9	55,600	100.0
Non-Ag. Activities	1,000	3.8	5,000	18.9	3,000	11.3	--	--	2,000	7.5	7,200	27.2	8,300	31.3	26,500	100.0
Others[a]	11,350	19.4	9,700	16.6	14,250	24.5	8,450	14.4	5,200	8.9	2,000	3.4	7,500	12.8	58,450	100.0
Total	64,550		127,175		104,200		50,050		39,900		25,100		16,300		427,275	
Percentage		15.1		29.8		24.2		11.7		9.3		5.9		3.8		100.0

SOURCE: Farm Survey Data, 1978-79.

[a]Others: repayment of debt, gifts, production, purchase of animals, etc.



SOURCE: Farm Survey Data, 1978-79.

FIGURE 7-3

Seasonal Variation of Quantity of Grain Borrowed by Farmers

and more scarce, forcing farmers to borrow grain for consumption and cash for both consumption needs and other cash expenses.

Our study has shown that the informal credit system provides both cash and in-kind loans to those farmers who experience cash and/or food deficits especially during the pre-harvest period. Cash loans are also provided for such purposes as taxes, trade, repayment of debts, etc.

But one of the most important offshoots of the seasonal demand for credit is that some farmers are forced to sell their products at depressed prices at harvest time in order to repay loans obtained earlier in the hungry season. Moreover, the hungry season coincides with the farming season of peak energy requirements for field work. This obviously touches on the controversial issue as to whether or not a loan taken to buy food at this critical point of the production season, should strictly be considered as a consumption or production loan. In an attempt to solve problems of food grain shortages during the seasonal hunger period and to stabilize grain prices at the village level the Eastern ORD established a pilot program of village level cereal banks.[1] The "cereal banks" function as follows: the ORD extends a loan to a village group to buy grain from individual farmers during harvest time at a price higher than the market price. This grain is stored in the village and resold later in the hungry season at a price lower than the prevailing market price yet higher than the purchase price. Thus established, a cereal bank plays two basic functions: the first function consists in stabilizing both

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[1] For further details on cereal banks, see Ismael Ouédraogo and David Wilcock [1981].

price paid and price received by farmers; the second function consists in making food grain available to farmers during the hungry season at "reasonable" prices.

Although the cereal banks formula is theoretically sound, there are a number of practical problems including adequacy of storage facilities at the village level; timeliness of loan disbursement; size of stocks; problems of fixing the "right" prices for both purchases and sales; how to dispose of unsold stocks to repay loans and to make room for new stocks; and problems of management and decision-making.

2. The Structure of the Informal Credit System

This section examines the number of lenders operating in the informal credit system and determines whether monopoly power influences rural financial markets by charging higher interest rates. The credit system will be divided into two parts: (1) the non-commercial part consisting of those no-interest credit transactions among farmers and relatives in a mode of mutual assistance; and (2) the commercial segment where credit transactions involve interest charges.

As was seen in the preceding chapter, 544 cash loans were extended for the entire survey period. Of these 544 cash loans extended during the survey period, 463 non-commercial loans were to be repaid in cash with no interest charges. Most of these transactions do not have any specific terms for repayment.

The commercial segment, on the other hand, involves the type of credit transactions where cash loans are given with an agreed

upon quantity of grain of some kind to be repaid. Although the exact date of repayment is not specified, these loans are generally due at harvest time.[1] Of the 544 loans, 81 commercial loans were extended by the informal credit system during the survey year.

2.1 Structure of the Overall Informal Credit System

Table 7-2 shows that, in total, 177 lenders have extended 544 cash loans. The cumulative frequencies show that 15 percent of the large lenders have granted 46 percent of all loans. Since these figures involve both the non-commercial and commercial segments, disaggregation will provide further insights.

2.2 Structure of the Non-Commercial Segment of the Informal Credit System

The structure of the non-commercial segment is shown in Table 7-3. The table reveals that the structure of the non-commercial segment is similar to the structure of the overall sample. Due to the fact that 85 percent of all cash lending transactions were non-commercial, one would expect the overall structure of the informal credit system to reflect the structure of that segment. Both structures reveal a concentration of loans given. For example, 16.5 percent of the top large lenders have provided almost half of the number of all loans in the non-commercial segment. In the overall informal credit system, 46 percent of the number of all loans were provided by 14.9 percent of the top large lenders.

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[1] The term "harvest time" is actually used in this type of credit transaction. Although this term is vague, lenders are visible at harvest to "encourage" repayment of loans.

TABLE 7-2

Frequency and Percentage Distribution of the Number of Cash Loans and Cash Lenders: Overall Sample

Number of Cash Loans Extended	Number of Lenders	Relative Frequencies of Lenders (percentage)	Cumulative Frequencies of Lenders (percentage)	Total Number of Loans	Percentage of Total Number of Loans	Cumulative Percentage of Number of Loans
1	77	43.5	43.5	77	14.2	14.2
2	31	17.5	61.0	62	11.4	25.6
3	24	13.5	74.5	72	13.2	38.8
4	12	6.7	81.2	48	8.8	47.6
5	7	3.9	85.1	35	6.4	54.0
6	9	5.1	90.2	54	9.9	63.9
7	2	1.1	91.3	14	2.6	66.5
8	4	2.2	93.5	32	5.9	72.4
9	5	2.8	96.3	45	8.3	80.7
11	2	1.1	97.4	22	4.1	84.8
13	1	.5	97.9	13	2.4	87.2
14	3	1.6	99.5	42	7.7	94.9
28	1	.5	100.0	28	5.1	100.0
Total	177	100.0		544	100.0	

SOURCE: Farm Survey Data, 1978-79.

TABLE 7-3

Frequency and Percentage Distribution of the Number of Cash Loans and Cash Lenders: Non-Commercial Segment

Number of Cash Loans Extended	Number of Lenders	Relative Frequencies of Lenders (percentage)	Cumulative Frequencies of Lenders (percentage)	Total Number of Loans	Percentage of Total Number of Loans	Cumulative Percentage of Number of Loans
1	71	43.3	43.3	71	15.3	15.3
2	32	19.5	62.8	64	13.8	29.1
3	24	14.6	77.4	72	15.6	44.7
4	10	6.1	83.5	40	8.6	53.3
5	6	3.7	87.2	30	6.5	59.8
6	7	4.3	91.5	42	9.1	68.9
7	3	1.8	93.3	21	4.5	73.4
8	3	1.8	95.1	24	5.2	78.6
9	4	2.4	97.5	36	7.8	86.4
10	1	.6	98.1	10	2.2	88.6
13	1	.6	98.7	13	2.8	91.4
14	1	.6	99.3	14	3.0	94.4
26	1	.6	100.0	26	5.6	100.0
Total	164	100.0		463	100.0	

SOURCE: Farm Survey Data, 1978-79.

2.3 Structure of the Commercial Segment of the Informal Credit System

Table 7-4 shows that almost two-thirds of the number of all loans were provided by 12.1 percent of the top large lenders. More importantly, Table 7-5 shows that, in value, the bottom 83 percent of the bottom small lenders, provided less than 40 percent of all loanable funds. The top 17 percent of large lenders provided about 61 percent, with the top 5 percent providing about 25 percent of all loanable funds in the commercial segment.

Although the above evidence suggests that loanable funds are concentrated in the hands of a few lenders in the commercial segment, another way of checking this finding is to examine the structure of this credit segment at the village level. Inasmuch as most cash lending transactions take place within the village, the structure of the commercial segment may vary widely from one village to the next.

Table 7-6 shows that in 8 villages out of 27 there were no cash commercial loans.[1] In addition, three villages accounted for about 50 percent of the total number of loans. These three villages (Namponkoré, Bomondi and Ougarou) are also those which display some degree of concentration of cash loans extended. In Namponkoré, for example, one lender provided almost 50 percent of the total number of all cash loans distributed (7 out of 16 loans). Two lenders have provided 75 percent of all loans (11 out of 16 loans). In Bomondi, two lenders provided all 13 loans. In Ougarou, two lenders extended

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[1] Lending transactions in some villages were not picked up due to enumerators weaknesses especially in Piela. But, in general, villages where MOSSIS are the predominant ethnic group, these kinds of transactions are practically nonexistent (Tilonti, Diabo I and II, Lantaogo, Ouobgo and Kondogo).

TABLE 7-4

Frequency and Percentage Distribution of the Number of Cash Loans and Cash Lenders: Commercial Segment

Number of Cash Loans Extended	Number of Lenders	Relative Frequencies of Lenders (percentage)	Cumulative Frequencies of Lenders (percentage)	Total Number of Loans	Percentage of Total Number of Loans	Cumulative Percentage of Number of Loans
1	24	58.5	58.5	24	29.6	29.6
2	7	17.1	75.6	14	17.3	46.9
3	5	12.2	87.8	15	18.5	65.4
4	2	4.9	92.7	8	9.9	75.3
5	1	2.4	95.1	5	6.2	81.5
7	1	2.4	97.5	7	8.6	90.1
8	1	2.4	100.0	8	9.9	100.0
Total	41	100.0		81	100.0	

SOURCE: Farm Survey Data, 1978-79.

TABLE 7-5

Distribution of the Number of Cash Lenders by Size of Cash Loan Extended: Commercial Segment

Size of Cash Loan Extended (CFA)	Number of Lenders	Relative Frequencies of Lenders	Cumulative Frequencies of Lenders	Total Amount Loaned (CFA)	Percentage of Total Amount Loaned	Cumulative Percentage of Total Amount Loaned
Up to 4,999	26	63.4	63.4	55,000	20.4	20.4
5,000-14,999	8	19.5	82.9	50,500	18.7	39.1
15,000-24,999	5	12.2	95.1	97,300	36.0	75.1
25,000-34,999	1	2.4	97.5	32,000	11.8	86.9
35,000-44,999	1	2.4	100.0	35,500	13.1	100.0
Total	41	100.0		270,300	100.0	

SOURCE: Farm Survey Data, 1978-79.

TABLE 7-6

Number of Cash Loans and Cash Lenders and Distribution of Lenders
by Number of Loans at the Village Level

(Commercial Segment: 1978-1979)

Village	Number of Loans	Number of Lenders	Number of Cash Lenders by the Number of Cash Loans Extended							
			1 Loan	2 Loans	3 Loans	4 Loans	5 Loans	6 Loans	7 Loans	8 Loans
Gbanlamba	6	5	4	1						
Komboassi	5	4	3	1						
Lanyabidi	2	1		1						
Bonbonyenga	1	1	1							
Dabesma	0	-								
Piela	1	1	1							
Monkontoré	1	1	1							
Lantaogo	0	-								
Namponkoré	16	6	3	1		1			1	
Kindi Kombou	4	1				1				
Logobou	4	2	1		1					
Bomondi	13	2					1			1
Foanboanli	1	1	1							
Ouobgo	1	1	1							
Kondogo	0	-								
Tilonti	0	-								
Diapangou	7	4	2	1	1					
Botou[a]	0	-								
Ougarou[a]	1	1	1							
Mantchangou	0	-								
Moadagou	4	2	1		1					
Poniokonli	2	1		1						
Ougarou	12	7	4	1	2					
Tindangou	0	-								
Kpajali	0	-								
Diabo I	0	-								
Diabo II	0	-								
Total	81	41	24	7	5	2	1	-	1	1

SOURCE: Farm Survey Data, 1978-79.

[a]North of Fada

half of the 12 loans. The other villages had fewer cash lending transactions ranging from 1 to 7 loans, and did not show any significant concentration of cash lending power.

From the above evidence it is clear that there is a concentration of cash lending in the commercial segment of the informal credit system of Eastern Upper Volta. But this concentration varies widely from one village to the next.[1] An important implication of this finding is that interest charges would be expected to be extremely high. This is examined in the next section.

2.4 Characteristics of Farm Households and Credit Transactions

We reported in the preceding chapter that ANTRAC farmers are net cash lenders, while TRAD farmers are net cash borrowers. The purpose of this section is to verify whether this characteristic holds across zones and to examine the relationships between family size and credit status.

Table 7-7 shows that within the TRAD sub-sample, net lenders outnumber net borrowers in two-thirds of the zones by a margin of one to three or higher. This margin is even more important in the ANTRAC sub-sample where the number of net lenders is considerably

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[1] In a number of instances some lenders intervene in both the non-commercial and commercial segments of the informal credit system. For example, in the village of Diapangou one lender has extended 28 loans of which 26 were provided to borrowers in the non-commercial segment and 2 in the commercial segment. This is an important fact which should be taken into consideration when examining the number of lenders in both segments. Although the overall total of cash lenders in the sample is 177, the number of lenders in the two segments do not add to 177, due to the fact that some lenders intervene in both segments.

TABLE 7-7

Number and Percentage Distribution of Net Cash Lenders and Net Cash Borrowers by Zone: TRAD vs. ANTRAC Sub-Samples

Zone	TRAD Sub-Sample				ANTRAC Sub-Sample			
	Net Borrowers		Net Lenders		Net Borrowers		Net Lenders	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Bogandé	4	22.2	14	77.8				
Mani	5	27.8	13	72.2				
Piéla	1	50.0	1	50.0	1	25.0	3	75.0
Diabo	1	33.3	2	66.7	3	16.0	16	84.0
Logobou	7	30.4	16	69.6	4	33.3	8	66.7
Partiaga	12	52.2	11	47.8				
Yondé	1	12.5	7	87.5				
Diapangou	5	62.5	3	37.5	1	10.0	9	90.0
Botou[a]	4	22.2	14	77.8				
Kantchari	2	14.3	12	85.7				
Ougarou	6	60.0	4	40.0	1	7.1	13	92.9
Pama	11	61.1	7	38.9				

SOURCE: Farm Survey Data, 1978-79.

[a]North of Fada

higher than that of net borrowers in all five ANTRAC zones. In three zones out of five, the percentage of net lenders is between 84 and 93 percent. It would appear, therefore, that ANTRAC households lend more than they borrow in all zones.

On a comparative basis, Table 7-7 shows that in the five zones where both TRAD and ANTRAC households are present, the relative percentage of net lenders is proportionately higher for ANTRAC households except in the Logobou zone. This difference is even more dramatic in the zones of Ougarou and Diapangou where ANTRAC net lenders represent 92.9 percent and 90 percent, respectively, as compared with only 40 percent and 37.5 percent for TRAD farmers in the same zones, respectively. Furthermore, Table 7-8 shows that there are proportionately more net lenders than net borrowers in each sub-sample. But the percentage difference between the number of net lenders and net borrowers is greater within the ANTRAC sub-sample (83 percent versus 17 percent) than within the TRAD sub-sample (64 percent versus 36 percent).

In summary, it clearly appears that, in all five zones, the majority of ANTRAC households are net lenders (67 percent up to 93 percent). In four zones out of five, the relative percentage of ANTRAC households who are net lenders is substantially higher than their TRAD counterparts. Although within the TRAD sub-sample there are more net lenders than net borrowers, there is a considerable variation in the percentage of net lenders across zones: 39 percent to 86 percent compared with 67 to 93 percent for the ANTRAC sub-sample. Thus, ANTRAC households tend to lend more than they borrow

TABLE 7-8

Number and Percentage Distribution of Net Cash Lenders and Net Cash Borrowers: TRAD vs. ANTRAC Sub-Samples

	TRAD Sub-Sample		ANTRAC Sub-Sample	
	Number	Percentage	Number	Percentage
Net Borrowers	59	36	10	17
Net Lenders	104	64	50	83
Total	183	100	60	100

SOURCE: Farm Survey Data, 1978-79.

TABLE 7-9

Number and Percentage Distribution of Net Cash Lenders and Net Cash Borrowers by Household Size: TRAD vs. ANTRAC Sub-Samples

	TRAD Sub-Sample				ANTRAC Sub-Sample			
Household Size	Number of Net Borrowers	Percentage	Number of Net Lenders	Percentage	Number of Net Borrowers	Percentage	Number of Net Lenders	Percentage
1-5 Persons	17	28.8	34	32.7	3	30	5	10
6-10 Persons	34	57.6	49	47.1	4	40	20	40
11 and Over	8	13.6	21	20.2	3	30	25	50
Total	59	100.0	104	100.0	10	100	50	100

SOURCE: Farm Survey Data, 1978-79.

across zones not only within their own sub-sample but also in comparison to TRAD households.[1]

Family size was considered in examining the relationships between farmers' characteristics and their credit status. Table 7-9 shows that in the ANTRAC sub-sample, 70 percent of net borrowers are in the small and medium size households, while only 50 percent of net lenders are in these household size categories. Hence, 50 percent of ANTRAC net lenders are in the large household category (11 persons or more). Moreover, only 20 percent of TRAD net lenders are found in the large household category, as opposed to 50 percent in the ANTRAC sample.

3. Performance of the Informal Credit System

In this section the performance of the informal credit system will be evaluated. We shall first examine the operational efficiency of extending loanable funds to borrowers. This would be achieved first by considering timeliness of disbursement of loans and the procedures involved. Second, by assessing the real cost of borrowing in the informal credit system including interests charged to borrowers, distance traveled, number of visits and gifts given to lenders, if any, and third, by analyzing repayment performance. Emphasis will be placed on the evaluation of the performance of the commercial segment as the non-commercial segment does not involve any interest charges and virtually no terms for repayment are specified in most cases.

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[1] Also see Appendix III.

3.1 Operational Efficiency and Lending Procedures in the Informal Credit System

In the informal credit system, procedures consist of oral agreements between lenders and borrowers. Since most lenders and borrowers are illiterate there are no formal procedures involving paper work. Thus, most expenses related to formal credit institution operations are not present in the informal credit system. The only operating expenses which may exist are commissions given by private traders to their intermediaries.[1] Other costs include losses due to non-repayment.

Credit transactions are negotiated on the spot in a single visit so that there is no traveling back and forth to get loans approved. Lenders either agree or refuse to lend the requested amount. Thus, borrowers are spared the frustration associated with time-consuming procedures such as those encountered in the ORD's credit system. In addition, informal lenders do not require any formal collateral against loans. In general lenders know their clients very well as they tend to live in the same village.

3.2 Real Cost of Borrowing in the Commercial Segment of the Informal Credit Segment

The real cost of borrowing in the commercial segment includes the number of visits, time lost in travel to get loans, and interest charged.

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[1] It was pointed out earlier in Chapter VI that a number of traders intervened indirectly in the informal credit system through their village level farmer intermediaries. Since borrowers were only dealing with the latter it was not possible to either pick up all transactions originating from all traders or to get commissions given to their intermediaries. For further insights see Ouédraogo and Wilcock [1981].

3.2.1 Number of Visits and Distance Traveled

Informal credit transactions are generally negotiated in a single visit. This contrasts with the ORD's formal credit system where two-thirds of borrowers have to visit credit agents two to five times to get their loan applications processed.

In terms of distance traveled, in 98 percent of all borrowing transactions, borrowers were living in the same village (71 percent of the cases) or in neighboring villages located at 25 miles or less. Only in 2 percent of the cases did transactions take place in remote places (over 100 miles).

3.2.2 Interest Charges and Interest Rates

Commercial lending in the informal credit system involves lending in cash with repayment in kind at harvest. Computations of interest rates are therefore difficult since in-kind repayments must be converted into monetary values. Sale prices (i.e., actual market prices) prevailing in the zone at the time of repayment were utilized to convert quantities of sorghum and/or millet into monetary values. Interest was calculated only for those borrowings involving repayments in millet or sorghum since those are the most important crops. Value of repayment in animals was virtually impossible to calculate as such calculations would have required data on both sex and age. Hence, both repayments in animals and other minor crops will not be considered. They were unimportant anyway as was pointed out in the preceding chapter.

Table 7-10 shows that interest rates are extremely high. Monthly interest rates range from as low as .85 percent to as high

TABLE 7-10

Interest Charges and Interest Rates on Individual Cash Borrowings:
Commercial Segment of the Informal Credit System

Zone	Sum Borrowed (CFA)	Quantity of Grain Repaid (in kgs)	Price/kg[a] (CFA)	Value of Repayment (CFA)	Interest Charges (CFA)	Repayment Period (days)	Monthly[b] Interest Rate (percent)	Annual[c] Interest Rate (percent)
Bogandé	1,000	74	40	2,960	1,960	42	140.0[d]	1680.0[d]
	1,000	37	40	1,480	480	49	29.4	352.6
Mani	1,000	38	40	1,520	520	161	9.7	116.4
	2,500	74	40	2,960	460	182	3.0	36.0
Logobou	500	19	32	608	108	161	4.0	48.0
Partiaga	2,250	101	36	3,636	1,386	154	12.0	144.0
	2,000	101	31	3,131	1,131	91	18.6	223.2
	4,000	202	35	7,070	3,070	35	65.7	788.4
Ougarou	1,500	95	26	2,470	970	112	17.4	208.8
	1,000	38	26	988	- 12[e]	203	- .2[e]	- 2.4[e]
	600	38	51	1,938	1,338	154	43.4	520.0
	300	19	26	494	194	140	13.7	164.4
	300	19	26	494	194	119	16.1	193.2
	1,200	76	26	1,776	776	168	11.4	136.8
	500	38	26	988	488	91	32.1	385.2
Pama	3,000	114	27	3,078	78	91	.9	10.8

SOURCE: Farm Survey Data, 1978-79.

[a]Prices are average sale prices realized on local markets by period (i.e., approximately a month) and by zone.

[b]Months of 30 days.

[c]Years of 360 days.

[d]This figure seems unusually high and it might be caused by a recording error.

[e]Negative interest charge and interest rate because the value of repayment is lower than the amount borrowed.

as 140 percent.[1] Also, annual rates vary from 10.2 percent to 1680 percent[2] corresponding to the two extreme monthly rates.

The main explanation for these extremely high interest rates is the short period of elapsed time between borrowing and repayment. The shortest term is only 35 days, while the longest is 203 days (barely 6 months). The average period of repayment is 117 days (about 4 months). Prices used to value in-kind repayments are also critical in calculating interest rates. Since prices vary widely among zones and from one period to the next, resulting interest rates depend not only on time but also on prevailing market prices at the time the borrowing is repaid. Another crucial variable is the quantity of grain repaid. Since virtually all credit transactions are privately negotiated on an individual basis, lenders have a powerful leverage in setting the amount of grain to be repaid. The final agreement depends on: (1) the lender's past experience in terms of past agricultural product prices and his expectations regarding future prices; and (2) how badly the borrower needs the money.

On the lender's side, Table 7-11 shows interest charges and interest rates computed on repayments received for cash loans extended. On an overall regional basis positive monthly interest rates range from 7.2 percent to 67.2 percent, corresponding to annual interest rates of 86.5 percent and 806.4 percent, respectively.

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[1]Although this incredibly high interest rate may be somewhat shocking, it is nevertheless real. Some enumerators have told us that some farmers have come to them to borrow cash at similar interest rates in exchange for grain.

[2]This figure seems unusually high and it might be caused by a recording error.

TABLE 7-11

Interest Charges, Interest Rates on Individual Cash Loans:
Commercial Segment of the Informal Credit System

Zone	Sum Lent (CFA)	Quantity of Grain Received (kgs)	Price/Kg (CFA)	Value of Repayment (CFA)	Interest Charges (CFA)	Repayment Period (days)	Monthly Interest Rate (percent)	Annual Interest Rate (percent)
Bogandé	1,500	57.0	40	2,280	780	147	10.6	127.2
	2,500	95.5	40	3,820	1,320	112	14.1	169.2
	1,500	57.0	40	2,280	780	77	20.2	243.1
	600	19.0	40	760	160	91	8.8	105.5
	1,000	38.0	40	1,520	520	98	15.9	191.0
	2,000	55.5	40	2,220	220	42	7.9	94.8
	2,500	191.0	40	7,640	5,140	112	55.1	661.2
	1,000	76.0	40	3,040	2,040	91	67.2	806.4
	2,000	76.0	40	3,040	1,040	153	10.2	122.4
	1,500	76.0	13	988	- 512[a]	98	-10.4[a]	-125.3[a]
Logobou	1,500	101.0	32	3,232	1,732	245	14.1	169.2
	1,000	101.0	32	3,232	2,232	182	36.7	440.4
	1,500	101.0	32	3,232	1,732	189	18.3	219.6
	1,500	101.0	40	4,040	2,540	145	32.9	395.8
Partiaga	5,000	202.0	36	7,272	2,272	77	19.7	212.4
	2,500	101.0	36	3,636	1,136	77	17.7	212.4
	2,500	101.0	36	3,636	1,136	77	17.7	212.4
	5,000	202.0	31	6,262	1,262	105	7.2	86.5
	14,000	606.0	42	25,452	11,452	112	21.9	262.9
	2,000	101.0	42	4,242	2,242	126	26.7	320.3
	2,000	101.0	42	4,242	2,242	105	32.0	384.3
	2,000	101.0	42	4,242	2,242	182	18.5	221.7
	2,000	101.0	42	4,242	2,242	91	36.9	443.5
	1,500	101.0	31	3,131	1,631	77	42.4	508.4
Kantchari	1,000	76.0	34	2,584	1,584	105	45.2	543.1
	750	38.0	34	1,292	542	112	19.3	232.2
Ougarou	1,250	57.0	40	2,280	1,030	182	13.6	162.9
	1,250	57.0	40	2,280	1,030	182	13.6	162.9
	3,000	152.8	26	3,973	973	126	7.7	92.7
	2,000	76.0	26	1,976	- 24[a]	133	- .3[a]	- 3.6[a]
	2,000	152.8	51	7,793	5,773	175	49.6	595.8
	1,000	76.0	51	3,876	2,876	168	51.3	616.2
	500	38.0	51	1,938	1,438	168	51.3	616.2
	250	38.0	51	1,938	1,688	168	51.3	616.2
	250	19.0	40	760	510	154	39.7	476.8
	1,000	76.0	37	2,812	1,812	189	28.7	345.1
	1,000	76.0	37	2,812	1,812	112	48.5	582.4

SOURCE: Farm Survey Data, 1978-79.

[a]Negative interest charges and interest rates due to value of repayment in kind lower than sum lent.

The average repayment period is 120 days (i.e., 4 months) on an overall regional basis and ranges from 42 days to 245 days. On a zone-by-zone basis, the shortest term is in the Bogandé and Partiaga areas with 102 days (i.e., a little over 3 months) and Logobou has the longest average term with 193 days (about 6 months).

The average monthly interest rate is lowest in the Bogandé and Partiaga zones with 23.3 percent and 23.8 percent, respectively, although they have the shortest terms. This is because grain prices are also higher resulting in higher repayment values. Logobou, despite the longest average term has a higher average monthly interest rate with 25.5 percent because of larger quantities of grain demanded for repayment.

In summary, our survey has revealed that interest rates are extremely high in the commercial segment of the informal credit system because of the (1) short periods of time allowed for repayments (four months on the average); (2) substantial quantities of grain demanded for repayments;[1] and (3) concentration of cash lending power in the hands of few lenders.

This evidence suggests that "monopoly" powers prevailing in the informal credit system demonstrated earlier do indeed result in extremely high interest charges.[2] Money lenders such as private

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[1] In Partiaga, for example, 10 cash borrowings totaling 38,000 CFA were repaid in grain the value of which was 66,357 CFA. With an average repayment period of 102 days, monthly interest would be 21.1 percent. Likewise, in Bogandé where 10 cash borrowings totaling 15,500 CFA were repaid in grain with a value of 26,600 CFA. The average repayment period being 102 days, monthly interest rate is also 21.1 percent.

[2] For example, on Table 7-11, of the 10 loans extended in the Partiaga zone, 5 originated from the same lender and amounted to 22,000 CFA out of a total of 38,500 CFA (i.e., 57 percent).

traders and large farmers not only stand to benefit from higher interest rates but they also stand to gain even higher profits as they resell this grain later in the hungry season when prices are escalating.

Although the high interest rates prevailing in the commercial segment of the informal credit system would seem to indicate that grain traders "exploit" farmers, a word of caution is in order. The same large cash lenders often also provide cash loans to farmers in the non-commercial segment with no interest rates.[1] For example, in Diapangou a cash lender has extended 13 cash loans to farmers. Ten of the thirteen cash loans were granted to farmers in the non-commercial segment with no interest rates since the loans were to be repaid in exactly the same amounts. Only three commercial cash loans were extended and were not repaid after six months. Since the average term for repayment ranges from four to six months these three commercial loans may be considered delinquent.

The practice of computing nominal interest rates on an annual basis may not be the "right" thing to do because in the minds of cash lenders and borrowers in the commercial segment, loans have to be repaid in four to six months. One should keep in mind that most cash borrowings take place in the hungry season (i.e., June, July and August) and should be repaid at harvest (November through December) i.e., after four to six months. One should also take into consideration the fact that cash lenders do provide some service to farmers in the non-commercial segment of the informal credit system through loans with negative interest rates and that there is some risk involved in lending cash to farmers in the commercial segment.

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[1]This means negative real interest rates.

In addition, one has to take into account the opportunity cost of commercial loans which are not repaid either "on time" or not at all. Moreover, the end of survey situation of credit transactions indicates that cash lenders did not often expect to collect loans extended to relatives. In the final analysis, although commercial cash lenders realize high profit on resale of grain when prices are higher, the above elements have to be considered in calculating the overall net benefit.[1] During the survey some grain traders openly admitted that they do experience losses due to default but such losses are more than offset by high interest charges and high prices of resale of grain.[2] Hence, there is an element of risk which is an important component of interest rate in addition to concentration of lending power.

3.3 Repayment Performance of the Informal Credit System

As mentioned earlier, credit dealings in the informal credit system do not have, in most cases, specific dates set for repayments at the time of the transactions. This is especially true for the non-commercial segment where, although repayment is expected, borrowers do not have to reimburse the lender at a given date. Harvest time is usually the repayment time for the commercial segment. This makes it difficult to utilize the usual criteria to evaluate the

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[1]The foregoing argument is valid for cash lenders living in the area. Outside large grain traders do not provide non-commercial loans. But they do give significant sums of money and other gifts to village chiefs in return for their help in the purchase of grain.

[2]For further details see Ouédraogo and Wilcock [1981].

repayment performance of the informal credit system (i.e., those used in connection with formal credit institutions). Another problem which adds to the difficulties of such an exercise is the fact that the data were collected during only one year. It was therefore impossible to get repayment information on those credit transactions that occurred towards the end of the survey as they had not "matured" yet.

Despite the foregoing problems, figures on repayment performance were calculated for those loans and borrowings which occurred in, and were repaid within, the survey period. Thus, Table 7-12 shows that, of the 544 cash loans distributed during the 12-month period, 325 were repaid fully. This means that overall repayment rate is about 60 percent. Both commercial and non-commercial loans have about the same repayment rates: 59.6 percent for non-commercial loans and 60.5 percent for commercial loans. In-kind loans had somewhat higher repayment rates with 68.5 percent. Of a total number of 633 cash and in-kind loans, 386 were repaid, for an overall loan repayment rate of about 61 percent.

Table 7-13 reveals that cash borrowings were repaid for 72.2 percent of the cases. Also, non-commercial borrowings were repaid at 71.6 percent, while commercial borrowings were repaid at 75 percent. As for the 34 in-kind borrowings, 26 were repaid, which corresponds to a repayment rate of 76.5 percent. Of all 196 borrowings, including both cash and in kind, 143 were repaid for an overall repayment rate of about 73 percent.

Although the percentage of non-repayment (27 percent) is substantial, especially in the case of lending transactions, this is

TABLE 7-12

Eastern ORD: Rate of Repayment of Loans Extended in the Informal Credit System

Nature of Loans	Number of Loans Distributed	Number of Loans Repaid	Repayment Percentage
Non-Commercial Cash Loans	463	276[a]	59.6
Commercial Cash Loans	81	49[b]	60.5
Sub-Total Cash Loans	544	325	59.7
Non-Commercial In-Kind Loans	75	47[b]	62.5
Commercial In-Kind Loans	14	14[a]	100.0
Sub-Total In-Kind Loans	89	61	68.5
Overall Total Loans	633	386	60.9

SOURCE: Farm Survey Data, 1978-79.

[a]Repaid in Cash.

[b]Repaid in Kind.

TABLE 7-13

Eastern ORD: Rate of Repayment of Borrowings in the Informal Credit System

Nature of Borrowings	Number of Borrowings	Number of Borrowings Repaid	Percentage of Repayment
Non-Commercial Cash Borrowings	134	96[a]	71.6
Commercial Cash Borrowings	28	21[b]	75.0
Sub-Total Cash Borrowings	162	117	72.2
Sub-Total In-Kind Borrowings	34	26[b]	76.5
Overall Total Borrowings	196	143	72.9

SOURCE: Farm Survey Data, 1978-79.

[a]Repaid in Cash.

[b]Repaid in Kind.

due, as was mentioned above, to the fact that a number of transactions took place towards the end of the survey period. To substantiate this statement, we considered all cash lending transactions originating from lenders with five loans or more and examined the number of cash loans provided, and how many were repaid and not repaid. In addition, loans not repaid were broken down by the time elapsed since they were extended. Table 7-14 shows that 33 cash lenders with 5 cash loans or more, representing 18.6 percent of all cash lenders, had distributed 280 cash loans out of 544 (i.e., 51.5 percent). Of these 280 cash loans, 175 were repaid (i.e., 62.5 percent). Of the 105 loans which were not repaid at the end of the survey (i.e., 64.8 percent), 68 had been extended for 6 months or less. Only 37 (i.e., 35.2 percent) had 7 months or more (but less than a year). Further, of these 68 cash loans with 6 months or less, 42 had 4 months or less of age. Even considering that the implicit expected terms of repayment are within a 4-month period in the informal credit system (i.e., the average repayment period), only 63 loans out of 280 would be considered delinquent. This is a delinquency rate of 22.5 percent. If 6 months is the expected term, the delinquency rate would be 16.8 percent. Obviously, in the event that 12 months is the implicit term, the delinquency rate would be even lower.

In summary, one may conclude that repayment rates are higher in the informal credit system than in the formal ORD credit program. Moreover, one of the major reasons that borrowers repay loans at a higher rate than they do in the formal credit system is mostly due to the fact that they wish to keep a good credit rating to secure

TABLE 7-14

Number of Cash Loans Extended by Large Cash Lenders[a] and Repaid or Not Repaid at the End of the Survey

Number of Cash Loans Extended	Number of Lenders	Total Number of Cash Loans	Number of Cash Loans Repaid	Number of Cash Loans Not Repaid	Number of Cash Loans Not Repaid by Age[b]				
					Less Than 1 Month	1-2 Months	3-4 Months	5-6 Months	7 and Over but Less Than 12 Months
5	6	30	22	8	1	1	1	2	3
6	9	54	33	21	--	1	5	5	10
7	2	14	8	6	--	--	--	--	6
8	4	32	22	10	1	5	1	1	2
9	5	45	25	20	4	7	2	2	5
11	2	22	19	3	1	--	--	--	2
13	1	13	7	6	2	1	1	--	2
14	3	42	25	17	2	1	--	2	12
28	1	28	14	14	--	5	--	4	5
Total	33	280	175	105	11	21	10	16	47

SOURCE: Farm Survey Data, 1978-79.

[a]A large cash lender is defined as having extended five or more loans.

[b]Here "age" refers to the time elapsed from the date a loan was given and the end of the survey, and not the time elapsed since the date of maturity of the loan.

future loans. Also, the element of shame associated with default in the informal credit system is another reason accounting for high repayment rates in the informal credit system as was mentioned in Chapter V.

4. Some Insights into Farmers' Attitudes Toward Credit, Availability of Credit in Rural Areas and Practices Against Delinquent Borrowers

The prime objective of this section is to obtain some insights (1) on the ranking of the most important purposes which farmers borrow for; (2) to explore the various possibilities offered to farmers in terms of access to credit resources in their own socio-economic environment; (3) to examine the various conditions under which credit transactions take place for various purposes; and (4) to identify actual practices in effect in the informal credit system to deal with loan delinquency and default.

The data used in this section and the following were obtained by a one-shot attitudinal survey which was primarily designed to: (1) cross check and complement the objective results analyzed in the preceding sections; and (2) to see what formal lending institutions can learn from an informal credit system. Questions were intentionally open-ended to allow farmers to freely express their opinions, perceptions and ideas about a whole array of credit-related matters.

Unlike the rigid framework of precoded questionnaires, the attitudinal questionnaire was arranged in a conversation-like format to allow for a free exchange between the enumerator and the farmer. This enabled enumerators to probe farmers on a wide range of sensitive

issues. The questionnaire was administered to both TRAD and ANTRAC samples (i.e., a total of 480 households).

4.1 Purpose of Borrowing

At the outset it should be mentioned that, of all 480 farmers interviewed, 433 (i.e., 92 percent) identified the purpose of the borrowings. Asked to rank in order of importance the four[1] major purposes which farmers were likely to borrow for, the following answers were recorded: (1) food, (2) weddings, (3) funerals[1], and (4) taxes. Other purposes mentioned included medicines, ceremonies and feasts, trade and so forth. Production was cited as a minor purpose and ranked even lower than medicines, ceremonies and trade.

The foregoing results are consistent with what was found in Chapter VI where household expenses ranked first in terms of use of borrowed funds. Since weddings and funerals did not specifically appear on the precoded answer list, they were lumped under the code of "other household expenses." Furthermore, in Chapter V, it was seen that one of the reasons farmers were repaying money lenders was the shame associated not only with default but also with borrowing in the first place. Asked to rank the above four major purposes from the most shameful to the least shameful, farmers put weddings first, food second, funerals third and taxes fourth. Borrowing for other minor purposes was not perceived as shameful. These results indicate that farmers are likely to be more reluctant to talk about borrowings

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[1] Funerals are an important purpose of borrowing. In a number of zones in the Eastern ORD, funerals are extremely expensive, especially those of in-laws where one may be obligated to provide beverages, food and animals to guests for an entire week.

related to these purposes in the same order. This would also indicate that the amounts involved would be understated in the same order. And since these four purposes are also the most important, this would suggest that the overall borrowings value is understated. This, coupled with the fact that farmers are generally less open about their borrowings, has contributed to the relatively low figures observed earlier.

4.2 Availability of Financial Resources and Production Credit

It was found earlier that borrowing for production purposes was rare. Although a number of ANTRAC farmers had purchased their equipment for cash, not a single loan has been taken from a private lender to buy inputs from the ORD. Asked whether there were people in the village who could lend to farmers to purchase fertilizers, 79 percent of all farmers gave a negative response. The same question asked about the availability of loans for plows and carts resulted in even higher negative answers (92 percent).

The foregoing evidence would suggest that the majority of farmers do not believe that there are financial resources available at the village level to finance acquisition of productive inputs and other traction equipment. Obviously, the mere availability of financial resources does not necessarily mean that such resources are available for financing agricultural production; it may well be that farmers do not perceive investing in agriculture as being profitable. One should keep in mind that our analysis in Chapter V revealed that animal traction packages are not a low cost technology.

In order to obtain some information about farmers' perceptions of alternative investment profitability, the following question was put to farmers: "If you had 50,000 CFA cash would you buy a plow, a cart, cattle or would you engage in trade?" Of the 443 who answered out of 480, 38 percent said they would buy cattle, 32 percent said plows[1] 15 percent mentioned trade and 15 percent carts. It should be noted that plows constitute the only direct productive investment for crop production. Thus, 68 percent of farmers would have invested their cash into non-crop production activities. The importance of those who would have purchased cattle may indicate that some farmers taking draft animals on credit with the ORD are more interested in acquiring the animals than anything else. To obtain further insights on the availability of financial cash resources farmers were asked whether loans of 25,000 to 45,000 CFA were unusual in the village. Ninety percent of the 465 (out of 480) who answered the question said such loans were unusual. The survey revealed that only six loans were of this magnitude out of the 544 cash loans which were extended. To the question why this was the case, 81 percent of all those who found such loans rather unusual, cited "poverty" and scarcity of cash money; 11 percent mentioned the distrust and fear of not being repaid given the relative importance of the sums involved.

Of those 10 percent who believed such large loans would be obtained in the informal credit system, over half of them said people may borrow such amounts of money for trade only. The rest mentioned

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[1]Since the three investment alternatives were given, it is very likely that some farmers mentioned plows thinking this would please the enumerator who is an ORD agent.

weddings and other related expenses. Thus, although unusual, it is possible that relatively important sums of cash are lent by a handful of rich people for non-agricultural activities highly profitable in a very short period of time such as retail trading.

Our survey has revealed that farmers generally do not have access to loanable funds in the informal credit system for production purposes. This would indicate that, in the absence of formal credit resources the majority of farmers would not be able to adopt new technologies. But the fact that the technological package offered to farmers by the ORD is in the pilot phase and farmers are in the learning process may also indicate that investment in crop production is not perceived as profitable as other alternative investments such as cattle and trading.

4.3 Farmers' Attitudes Toward Credit Conditions

Since most credit transactions are generally intended for non-productive uses, it would be useful to know what conditions (i.e., terms and interests) farmers would expect in the case of productive loans. The survey revealed that 84 percent of the 470 answers recorded with respect to fertilizer, would give up to 12 months for repayment of which 33 percent would give from 1 to 6 months. This explains perhaps why in Chapter V a number of farmers mentioned six months as the time required to repay the EORD's short term loans.

Regarding the terms of repayment for 25,000 CFA given for the purchase of a plow, 30 percent gave between 1 and 12 months; 49 percent between 2 and 5 years. As for the terms of repayment for a loan of 45,000 CFA given for the acquisition of a cart, a lower percentage

of farmers were in favor of the 1- to 12-month period for repayment (14 percent) whereas 25 percent mentioned 4 to 5 years as compared with only 11 percent in the case of the plow. Also, 8 percent mentioned a period longer than 5 years as opposed to 1 percent in the case of the plow.

In summary, the terms of repayment expected by farmers conform to the ORD current policy as far as short term credit is concerned. A large proportion of farmers (84 percent) agree that they should not be more than 12 months. But for medium term loans it would seem that farmers tend to expect terms that are a direct function of the size of the loan. Hence, terms of repayment of a cart costing 45,000 CFA should be longer than the terms of a 25,000 CFA loan given for a plow.

Turning to interest that farmers would charge for the same loans mentioned above, the survey showed that 88 percent of farmers would charge no interest on the 5,000 CFA loan lent to purchase fertilizers. Only 12 percent would demand interest charges up to 1,000 CFA and over. For loans given for plows and carts, 78 percent and 72 percent of the farmers, respectively, would charge no interest.

These results are consistent with what was found in the informal credit system, i.e., that cash loans repaid in cash generally do not bear interest. But, there are some farmers who would charge interest and their percentage increases from 12 percent in the case of 5,000 CFA loan to 22 percent for a 25,000 CFA loan to 28 percent for 45,000 CFA loan. The practice of charging interest rates on cash loans repaid in cash is not widespread. As was seen in earlier sections, only commercial loans where money is lent in exchange for a repayment in kind, do bear interest.

4.4 Measures Against Loan Delinquencies and Default in the Informal Credit System

In Chapter V it was shown that the ORD was rather lax in dealing with delinquent borrowers. The ORD assumes that tougher measures may jeopardize the extension activities. This would be true if these measures (such as repossessing draft animals and traction equipment) were directly in conflict with actual practices in effect in the informal credit system. It was therefore thought that information obtained on the kinds of measures which informal lenders use to collect delinquent loans would help the ORD in dealing with this problem. The question was asked how informal lenders would react to delinquent borrowers who would owe (1) 5,000 CFA for fertilizer, (2) 25,000 CFA for a bicycle, (3) 25,000 CFA for a plow, (4) 45,000 CFA for a cart, and (5) 50,000 CFA for cattle.

Table 7-15 shows that the percentage of lenders who would take tougher measures increases with the sum lent. The percentage of those who would take no action drops sharply from 25 percent to 3 percent when the value of the loan increases from 5,000 to 50,000 CFA. but the single most important finding is the fact that, while the percentage of those who would repossess the item purchased with the 5,000 CFA loan is only 26 percent, this percentage jumps to 71, 72 and 73 percent for the most substantial loans. If one adds the percentage of those who would take delinquent borrowers to court, it turns out that 92 to 95 percent of lenders would take tough measures against delinquency and default.

The policy implications of the foregoing evidence is clear. The ORD does not have to be soft in dealing with loan delinquencies.

TABLE 7-15

Measures Taken by Lenders Against Delinquent Borrowers
(in Percentage)

Loan Amount (CFA)	MEASURES AGAINST DELINQUENT BORROWERS					
	No Action	No Future Loan for Delinquent Borrower	Go to Court	Repossess Item Bought with Loan	Physical Punishment	Others
5,000[a]	25	2	34	26	2	11
25,000[b]	5	1	20	72	--	2
25,000[c]	4	--	21	71	--	4
45,000[d]	3	--	22	73	--	3
50,000[e]	3	--	21	73	--	3

SOURCE: Farm Survey Data, 1978-79.

[a]Sum lent for the purchase of fertilizers.

[b]Sum lent for the purchase of a bicycle.

[c]Sum lent for the purchase of a plow.

[d]Sum lent for the purchase of a cart.

[e]Sum lent for the purchase of a pair of oxen.

Number of farmers who answered the questions: (a) and (c), 463; (b), 458; (d), 462; and (e), 465.

Tougher measures are not likely to backfire because they will not be in conflict with actual practices used in the informal credit system.

5. Some Insights on Farmers' Attitudes Toward Investment-Savings and the Issue of Savings Potential in Rural Areas

The objective of this section is (1) to analyze the attitudes of farmers toward investment-savings in order to identify alternative forms of investment-savings; (2) to explore the various non-credit sources of cash which farmers may have recourse to when need arises; and (3) to get a feel for savings potential in rural areas. The data used in this section were obtained from the same one-shot survey mentioned in the preceding section and administered to the 480 farmers.

5.1 Farmers' Attitudes Toward Investment-Savings

The issue that we attempted to pinpoint was what farmers would do with any money they chose not to use for consumption purposes. Table 7-16 shows that farmers' investment behavior changes with the amount of money at their disposal. The percentage of those who would buy cattle increases as the sum becomes more and more substantial. Also, the relative number of those farmers who would put their money in a formal savings institution increases with the amount of cash on hand; likewise for those who would have somebody else keep it for them. The number of those who would rather keep their money themselves diminishes as the sum gets larger. Still others would use their money for trading. The percentage of farmers who would invest in productive factors is very small.

TABLE 7-16

Percentage Distribution of Farmers by Various Forms of Savings Investments with Different Amounts of Cash on Hand[a]

(CFA)	Cattle	Sheep & Goats	Animals (not specified)	Banks & Other Formal Savings Institutions	Keep With A Friend or Others	Keep With Oneself	Trading	Productive Factors	Other Forms
100,000	23	2	25	20	7	4	12	2	5
20,000	13	18	27	13	5	8	12	2	2
5,000	1	36	26	10	3	14	8	1	2

SOURCE: Farm Survey Data, 1978-79.

[a]Number of farmers who answered the question: 462 out of 480 total.

Other conclusions that may be drawn from Table 7-16 are the following: (1) preferred investment-savings instrument seems to be animals; (2) at any level of available cash, the percentage of farmers who would put their money into animals is higher than all other investment alternatives combined; (3) whenever the sum is high enough to purchase cattle most farmers would do so, before buying other animals or saving in other forms.

Since many farmers seem to be inclined to invest their savings in animals in general and in cattle in particular, it may well be that this investment actually yields higher returns than other agricultural and non-agricultural activities.

5.2 Non-Credit Sources of Cash

What would farmers do when they need cash for any purpose in a case of emergency when they do not wish to borrow? This question was put to farmers and the answers are provided on Table 7-17 for the sums of 5,000, 20,000 and 100,000 CFA. The results on Table 7-17 are similar to those on Table 7-16. The latter shows that as the needed amount of money gets larger the percentage of farmers who have recourse to sale of cattle increases. As the sum gets smaller the percentage of farmers who would liquidate cattle declines, while the percentage of farmers liquidating small animals and crops or using other sources increases.

The percentage of farmers who do not have any source of cash increases as the sum needed increases. Thus, 4 percent of farmers would have no possible recourse to any source to get 5,000 CFA only. This percentage increases to 15 percent and up to 35 percent for

TABLE 7-17

Percentage Distribution of Farmers by Source of Liquidity Used to Acquire Cash

Amount of Cash Needed (CFA)	SOURCE OF LIQUIDITY						
	No Source	Sale of Cattle	Sale of Sheep & Goats	Sale of Animals (not specified)	Sale of Crops	Own Savings	Others
5,000[a]	4	--	29	24	34	3	6
20,000[b]	15	12	21	32	14	2	4
100,000[c]	35	30	1	21	5	1	8

SOURCE: Farm Survey Data, 1978-79.

[a]Number of farmers who answered the question: 453 out of 480 total.

[b]Number of farmers who answered the question: 438 out of 480 total.

[c]Number of farmers who answered the question: 406 out of 480 total.

20,000 and 100,000 CFA respectively. Another finding is that not many farmers would resort to cash savings. Only 3 percent of farmers would do so if the cash they need is 5,000 CFA. As the amount increases, fewer and fewer farmers would be able to use cash savings.

An important conclusion that one may draw is that savings are modest and the alleged widespread hoarding of cash in rural areas does not seem to be supported by the present data. Instead, farmers invest and/or save in the form of animals which they can convert into cash when need arises. Livestock is hence perceived as the safest form of savings as well as a very profitable investment.

In order to gain insights into the amount of cash that people may have at any point in time, farmers were asked to estimate how much money they thought the poor, the rich, and the average farmer (neither rich nor poor) had at their disposal. The percentage distribution of the answers to the question above is presented in Table 7-18. As high as 82 percent of those who answered the question believe the poor farmer had 5,000 CFA at most on hand. Only 2 percent think he may have between 5,000 and 10,000 CFA. As for the middle class farmer, 42 percent believe he is in the 5,000-30,000 CFA cash bracket while only 7 percent would put him beyond this bracket. Further, in the opinion of 53 percent of the farmers the rich would have 40,000 CFA up to over half a million CFA of cash on hand.

There seems to be a contradiction between the answers to this question and what was found above, which again points to the problem of reliability of data in research at the farm level in Third World

TABLE 7-18

Percentage Distribution of Farmers by Their Estimation of Amount of Cash on Hand by Wealth Class

Wealth Class	CASH ON HAND (CFA)											
	0	Up To 5,000	5,001-10,000	10,001-20,000	20,001-30,000	30,001-40,000	40,001-50,000	50,001-100,000	100,001-200,000	200,001-500,000	Over 500,000	Do Not Know
Wealthier Farmer[a]	--	2	4	6	8	8	5	23	16	4	6	22
Middle Class[b]	1	30	17	12	13	13	1	3	1	1	1	20
Poor Farmer[c]	19	63	2	--	--	--	--	--	--	--	--	16

SOURCE: Farm Survey Data, 1978-79.

[a]Number of farmers who answered the question: 448 out of 480 total.

[b]Number of farmers who answered the question: 453 out of 480 total.

[c]Number of farmers who answered the question: 447 out of 480 total.

countries. But it is certain that there is a wide variation of cash on hand among the wealthier classes.

5.3 Farmers' Attitudes Toward Modern Savings Institutions and Their Potential Response to Varying Interest Rates

In approaching the sensitive area of savings, it seemed useful at the outset to get some information about the type of informal savings system which exists at the village level. The question was whether in the village there were "trusted" people with whom other farmers were keeping their money. Of the 442 farmers who answered the question, 48 percent said that there were money keepers as compared with 52 percent who gave a negative answer. Of those 211 who answered positively, nearly half said that such "money keepers" were given something for their service while the other half said that they were not given anything. Of the first half, 90 percent said that gifts given to those "money keepers" consisted of cash.

It would seem hence that there is a certain form of informal savings system in rural areas although it does not appear to be widespread. This savings system operates when farmers give their excess cash to "money keepers," but there is no formal agreed-upon fee charged or interests received by the money keepers.

Turning to formal savings institutions, 81 percent of farmers (of the 463 who answered the question) knew what a bank was. In the latter, 62 percent knew they could withdraw their deposit any time they chose to do so. Also, 88 percent said they would be willing to deposit their money in the bank if there were one in the village, as compared with 80 percent who would do so even though the bank were

located outside the village (i.e., at the nearest town or larger village where the ORD sub-sector headquarters is located). It does not seem that distance (at least up to a certain point) is a significant factor.

It seems obvious that a program aiming at mobilizing savings in rural areas should set up branches in small towns or in fairly larger villages. It is therefore important to know beforehand whether farmers would be willing not only to travel five or ten miles to the bank, but also and more importantly, whether they would be confident enough to keep their money in that bank located in another place. The above evidence would indicate that a substantial majority are likely to behave that way.

The sums of money that farmers would deposit at either location of the bank is shown on Table 7-19. The percentage distribution of the number of farmers who would deposit their money is quite similar at each savings deposit bracket whether the bank is located in the village or at the sub-sector headquarters. The above evidence suggests that location and/or distance[1] do not seem to be an important variable in farmers' attitude in terms of depositing their money in a bank. What is important here is how farmers would feel about their money being taken out of their village.

Table 7-19 also shows that over half of all the farmers would be willing to deposit from up to 5,000 CFA to 30,000 CFA in the village bank, 19 percent between 30,000 and 50,000 CFA. This means that 75 percent would deposit up to 50,000 CFA.

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[1] Most villages in the sample are located within five to ten miles from a sub-sector headquarter.

TABLE 7-19

Percentage Distribution of Farmers by Amount of Potential Deposit in a Bank Located in the Village and Sub-Sector Headquarters

Location	POTENTIAL DEPOSIT (CFA)									
	Up To 5,000	5,000-10,000	10,001-20,000	20,001-30,000	30,001-40,000	40,001-50,000	50,001-100,000	100,001-200,000	200,001-500,000	Over 500,000
In the Village [a]	19	13	10	15	3	18	9	3	8	2
Sub-sector Headquarters[b]	18	13	13	12	3	16	13	3	6	3

SOURCE: Farm Survey Data, 1978-79.

[a] 389 farmers answered the question out of 426 who would deposit their money in a bank located in the village.

[b] 357 farmers answered the question out of 387 who would deposit their money in a bank located at the sub-sector headquarters.

Another aspect of farmers' attitudes toward savings was their potential response in terms of savings at varying interest rates. In the literature review we pointed out that numerous scholars contend that the saving behavior of farmers in rural areas is interest inelastic. Although we cannot test this hypothesis it was felt that the data at hand from hypothetical questions and answers would provide some useful information. To keep things as simple as possible, we asked farmers: "If the bank offered you at the end of one year 1,000 CFA on top of each 10,000 CFA that you would deposit, how much money would you keep with the bank?" The same question was asked for 2,000 CFA offered at the end of one year for each 10,000 CFA deposited. The two different interest rates are 10 percent and 20 percent, respectively. Table 7-20 shows that at an annual interest rate of 10 percent, 53 percent of the farmers would deposit 20,000 CFA or less. When the interest rate increases to 20 percent this percentage drops to 34 percent. On the other hand, the percentage of those who would deposit between 20,000 and 40,000 CFA increases from 13 to 24 percent when this interest rate increases. Also the percentage of those who would deposit 100,000 CFA or more varies from 5 percent to 14 percent when the interest rate changes from 10 to 20 percent. Still more significant is the variation in the percentage of the number of farmers who would deposit 20,000 or more at the two interest rate levels. This percentage increases from 42 percent when the interest rate is 10 percent to 60 percent at the 20 percent interest rate level.

Although our methodology of testing the interest elasticity of savings lacks rigor it does provide an indication of farmers'

TABLE 7-20

Percentage Distribution of Farmers by Potential Savings Deposit by Level of Interest Rate

	POTENTIAL DEPOSIT (CFA)										
Interest Rate	0	Up To 5,000	5,000-10,000	10,001-20,000	20,001-30,000	30,001-40,000	40,001-50,000	50,000-100,000	100,001-200,000	200,001-500,000	Over 500,000
10%[a]	4	8	9	36	11	2	15	9	2	2	1
20%[b]	4	6	4	24	17	7	11	11	8	4	2

SOURCE: Farm Survey Data, 1978-79.

[a]Number of farmers who answered the question: 444 out of 480 total.

[b]Number of farmers who answered the question: 466 out of 480 total.

potential savings response to varying interest rates. On the basis of our preliminary study, we conclude that savings are more likely to be interest elastic than inelastic. This would mean that, given an increase in the interest rate, farmers would be likely to deposit proportionately higher amounts of money. The results of this study on savings should be treated with extreme caution as they were derived from hypothetical answers to hypothetical questions. This caveat is in order because most farmers do not have any experience with modern banking.

6. Summary

Our analysis of informal credit has shown that the overriding role of the informal credit system is to provide cash and in-kind loans to farmers who experience cash and/or food deficits during the pre-harvest period. Most lending and borrowing transactions, for example, take place in the pre-harvest period (i.e., "hungry season," June through August) while repayment of loans occurs during the harvest and immediate post-harvest periods. The informal credit system has two sub-markets: non-commercial and commercial. The non-commercial sub-market operates within families and friends and usually does not involve interest payments. The commercial segment of informal credit involves interest payments.

The analysis of the structure of the informal credit system showed that there was a concentration of cash lending power in the hands of a few lenders. For example, in the commercial segment of the informal credit system, the top 17 percent of large cash lenders in our sample have extended 61 percent of all cash loans, with the

top 5 percent providing about 25 percent of all cash loans extended. But the concentration of cash lending varies widely from one village to the next. For example, while two cash lenders have granted 50 to 75 percent of the total number of cash loans in three villages, other villages had fewer cash commercial loans and did not show any significant concentration of cash lending transactions.

In examining the relationships between the characteristics of households and credit transactions, the survey results revealed that there were proportionately more net lenders across zones in the ANTRAC sub-sample than in the TRAD sub-sample. ANTRAC households tend to lend more than they borrow across zones not only within their own sub-sample but also in comparison to TRAD households. The survey also showed that 50 percent of ANTRAC net lenders tend to have large households (11 persons or more) as compared with only 20 percent of TRAD net lenders.

The analysis of the performance of the informal credit system demonstrated that lending procedures were highly simplified in comparison with the procedures of formal lending institutions. Since most lenders and borrowers in the informal credit system are illiterate there is no paper work. Lending procedures only consist of oral agreements between lenders and borrowers and loans are either refused or disbursed on a single visit. Thus, the operating costs of lenders consist only of commissions paid to intermediaries by private traders and losses due to non-repayment. In addition, informal lenders do not require any formal collateral against loans. In general, lenders know their clients very well and they tend to live in the same village. In 98 percent of all borrowing

transactions borrowers were either living in the same village (71 percent of the cases) or in neighboring villages of 25 miles or less.

The real cost of borrowing includes only interest payment in the commercial segment of the informal credit system. Interest rates based on the value of repayment in kind were found to be extremely high. The average monthly interest rate amounts to about 21 percent (i.e., 252 percent a year). But interest rates vary widely from one period to the next and from one zone to the next due to variations in prices over time. The period for repayment is extremely short (four months on the average). Although concentration of lending power accounts for these high interest rates we found that the same lenders also provide loans at negative real rates to some farmers in the non-commercial segment of the informal credit system. Lenders also experience losses due to default especially in cases when loans are granted to relatives. When all these facts are taken into account, in addition to the opportunity cost of loanable funds, one realizes that effective interest rates are lower than they appear on the surface.

The study showed that farmers generally did not have access to credit from the informal credit system for production purposes. This would indicate that in the absence of formal credit the majority of farmers would not be able to adopt the ANTRAC package.

The analysis of the repayment performance revealed that repayment rates are higher in the informal credit system than in the ORD formal credit program. For example, all cash and in-kind loans were repaid at 73 percent within the survey period of 12 months. Due to the fact that a number of credit transactions took place towards the

end of the survey, it was not possible to record repayment for those transactions. Also, because in most cases there was no specific date for repayment it was difficult to classify unpaid loans as delinquent.

The results of the study also showed that 92 to 95 percent of informal lenders would take tough measures against delinquent borrowers, including repossession and court action. This is in contrast with the lax measures taken by the ORD against delinquent borrowers. Thus, tougher measures taken by the ORD against delinquent borrowers are not likely to backfire because they will not be in conflict with practices used in the informal credit system.

The study of farmers' attitudes toward investment and savings revealed that livestock is the most preferred type of savings instrument in the absence of formal savings institutions in rural areas. Since a three- to four-year old head of cattle has a value of up to 50,000 CFA, and one sheep or goat is worth 3,000 to 5,000 CFA, it is understandable why farmers are inclined to channel their savings into livestock.[1] The survey revealed that the percentage of farmers who would put their savings into animals (cattle, sheep and goats) is higher than all other alternative investments combined. Since many farmers seem to be inclined to invest in livestock in general and in cattle in particular, it may well be that the returns on

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[1]A large number of farmers have cattle which they entrust to herders. It is extremely difficult to secure good data on the number of animals possessed by farmers because farmers pay taxes on their cattle and they are suspicious of anyone more or less linked with government services who asks about their cattle.

livestock may be higher than other agricultural and non-agricultural activities.

The results of the survey also indicated that cash savings are modest and the alleged widespread hoarding of cash in rural areas is not supported by the survey results. Instead, farmers invest or save in the form of animals which they can convert into cash when need arises. Finally, the analysis of farmers' attitudes toward modern banking and savings institutions demonstrated that farmers were willing to deposit their excess cash in banks. The study showed that farmers' potential response is likely to be interest elastic. But since most farmers did not have any banking experience these results must be treated with caution.

The conclusion that can be drawn from the analysis of this attitudinal survey on farmers' attitudes toward savings, is that there is some willingness on the part of farmers to deposit their savings in savings institutions. These indications may be encouraging signals for promoting savings mobilization in the Eastern ORD and in rural areas in Upper Volta.

CHAPTER VIII

SUMMARY AND POLICY IMPLICATIONS

1. Summary

The general objective of this study was to evaluate the institutional, financial, technical and economic performance of the government's agricultural credit program in Eastern Upper Volta; and second to examine the informal credit/financial system in the same region. The specific objectives were to: (1) review Upper Volta experience in agricultural credit in a historical perspective with emphasis on causes of success and/or failure; (2) describe the functioning of the Eastern Region's (EORD) credit program; (3) evaluate the institutional, financial, technical and economic performance of the credit program and to assess its distributional effects; (4) describe the informal credit system in rural Eastern Upper Volta; (5) analyze the structure and performance of the informal credit system and assess farmers' attitudes toward credit and savings; and (6) recommend policies and measures to improve the performance of the EORD credit program and alternative lending programs to improve the income and welfare of farmers.

This study was part of a broader farm survey of 480 farm households which was carried out by an MSU multidisciplinary team over a 12-month period in 1978-79 (April 30, 1978-May 1, 1979). A frequent interview method was used to collect input/output data on a weekly

and monthly basis from the 480 farmers over a 12-month period. In addition, special credit questionnaires were administered to the same sample of 480 farmers. Fourteen enumerators were supervised by five supervisors and nine statistical agents. Data coding and verification were performed at the EORD headquarters in Fada. Data validation, processing and preliminary analyses were carried out at the computer center (CENATRIN) in the capital city, Ouagadougou. Final indepth analysis was carried out at the MSU Computer Center.

The historical overview of Upper Volta's experience with agricultural credit over the last fifty years has revealed that early attempts to establish agricultural credit programs in the colonial era failed for several reasons including, operational and managerial problems, misunderstanding of local socioeconomic arrangements (e.g., collective ownership of land) and high delinquency and default rates.

Numerous credit programs were introduced in the post-independence period. For example, SATEC's medium term credit program for increasing food crop production appeared promising in the early 1960's but it collapsed after a few years. The major causes of failure of SATEC's credit program included lack of educational and training components, lack of cash crops and ill-timed dates for collection of repayment. In the mid-1960's and early 1970's period the National Development Bank (NDB) was entrusted with agricultural credit responsibilities in collaboration with the Regional Development Organizations (ORDs). But the relationships between the NDB and the ORDs became strained and the NDB phased out its direct lending activities.

One of the few apparently successful agricultural credit programs in the mid-1970's was the Matourkou credit program which

covered six villages in Western Upper Volta. The credit program involved a land settlement scheme and provided both short term loans for seasonal inputs and medium term loans for animal traction. The program was aimed at promoting both cash and food crop production and at increasing farmers' revenue. But there are several unique features of the Matourkou credit program including, highly motivated extension/credit agents, a reliable year-round feeder road, availability of local market outlets and an effective farmer training program. The performance of the program needs to be carefully studied to provide sound information on its technical, financial and economic impact at the farm level. The Matourkou experiment, especially the farmer training component, may be useful to other lending institutions in other regions of the country.

The EORD's current program which is geared at increasing food crop production provides both short and medium term loans in kind to farmers for seasonal inputs, draft animals and traction equipment. As of 1978-79 about 90 percent of the ORD's credit funds came from various external donors of which USAID was the most important contributor (about 42 percent). The administration of the EORD's credit program is supported by various bureaus, divisions and subdivisions at headquarters and by field extension/credit agents scattered around the region in a highly hierarchical network. Farmers obtain credit through village level organizations (village groups or cooperatives). In order to obtain a loan potential borrowers have to meet a number of criteria, including a village group membership fee, purchase of draft animal insurance and agreement to plant at least one-third of total acreage under cultivation to cash crops. Both

the provisions of credit and collection of loan repayment involve complex top-down bottom-up procedures of paperwork, orders and delivery of credit items and funds. Such complicated procedures coupled with unclear delineation of responsibilities among different bureaus at headquarters and at the field level have often contributed to the problems in implementing the EORD credit program.

The results of the farm level survey have revealed that the percentage of crop production sold by sampled households in the Eastern region varies from 8 to 15 percent; the use of improved seeds, fertilizers, insecticides and the employment of hired labor remains at an extremely modest level. The bulk of family labor is primarily used to produce the two staple food crops--millet and sorghum--for home consumption. A significant finding of the farm level study is the extent to which poverty in the countryside is pervasive in the Eastern Region of Upper Volta. For example, the survey revealed that per capita net household income for both animal traction and traditional farmers was 11,669 CFA and 13,255 CFA, respectively. The adverse effects of the 1978-79 growing season has accounted for the poor performance of donkey traction users.

In assessing the effectiveness of the EORD credit program, the survey revealed that a number of coordination problems have resulted in untimely delivery of both traction equipment and draft animals, poor training of farmers and draft animals and incomplete traction equipment packages being delivered to farmers. As a result of these deficiencies, 38 percent of farmers did not use their traction package the first year.

According to the EORD's officials the annual cost of the credit program amounts to about 10 percent of the ORD's total annual operating budget. Using the 10 percent figure we estimate that the average annual real cost of the EORD lending program was about 25 percent of the total loan portfolio outstanding over the 1977-80 period. Since borrowers are charged a nominal interest rate of 5.5 percent a year, it is estimated that the level of subsidy is about 19.5 percent if depreciation of buildings and equipment, losses due to default and inflation are excluded. Major factors contributing to the high real cost of lending are associated with high transportation costs of delivering animal traction equipment and other inputs to farmers in remote areas.

The results of the credit surveys showed that actual interest rate charged for short term credit was 7.69 percent rather than the 5.5 percent because farmers actually pay slightly higher prices for inputs than necessary to cover nominal interest charges. The real level of subsidy for short term credit is 17.31 percent. But this subsidy is underestimated since other costs are not taken into account. Transaction costs for borrowers included village group membership fee and opportunity cost of time spent in trips to apply for loans. When these costs are added to the actual interest charges, the real cost rate of borrowing is estimated to be 12.31 percent a year for short term borrowers.

Our survey revealed that repayment of loans over the last four year period (1977-80) has been poor. For short term credit, for example, the collection ratio (i.e., ratio of the volume of loan collection to the volume of amount due), excluding repayment against

arrears, declined from 78.4 percent in 1976-77 to 31.8 percent in 1979-80. The collection ratio for medium term credit was 37.8 percent in 1976-77, 54.2 percent in 1977-78, 34.0 percent in 1978-79 and 21.5 percent in 1979-80. The poor loan repayment was due to deficiencies in the EORD's credit delivery system which accounted for 37 percent of all cases of delinquency. Farmers were responsible for 37 percent of loan delinquency cases due to unwillingness to repay. Also various natural causes (drought, death or sickness of farmers and draft animals) accounted for 26 percent of all cases of delinquency. A substantial number of farmers perceived the ORD loans to be a one-time deal and the ORD collection procedures as being too soft compared with the methods used by private lenders.

Although the majority of farmers understood the objective of the credit program, the study revealed that a substantial number still did not understand the terms or the cost of their loans. For example, 47 percent of all short term borrowers did not know they had to repay their loans in twelve months. Also 60 percent of all medium term borrowers did not know the value of their loan package.

The results of the survey surprisingly showed that only 2.3 percent of farmers considered the ORD's low interest rate to be an important advantage. Most farmers thought that payment by installments, precise time for repayment and longer period for repayment were the most important advantages of the ORD's credit system. The low nominal interest rate, contrary to common assumptions, does not seem to be a critical variable in the decision of farmers to apply for a loan. This may also be an indication that other variables such as time involved in obtaining a loan, perceived profitability and risk

of the technical package, are considered to be more important than the nominal interest rate.

Although some difficulties in evaluating the impact of credit at the farm level because of the problems of fungibility, "attribution" and "substitution" effects, an attempt has been made to compare the technical and economic performance of traditional farmers (TRAD) and animal traction farmers (ANTRAC) who have received credit. Based on our 1978-79 farm surveys the ANTRAC program is not performing as anticipated. First on technical grounds, only donkey farmers have demonstrated a higher acreage effect per active worker (i.e., 18.8 percent) than TRAD farmers. In terms of yield effects, there was no difference in the yields of the two major food crops--millet and sorghum--between TRAD and ANTRAC farmers. But corn yields in all zones and groundnut yields in oxen zones were statistically higher for ANTRAC farmers than TRAD farmers.

Second, on economic grounds, all efficiency measures revealed that there was no significant difference between ANTRAC and TRAD farmers. Although oxen farmers had higher net crop production revenue per actif and per hectare than TRAD farmers in oxen traction zones, these differences were modest. For donkey traction, the adverse effects of the drought have made it practically impossible to draw any meaningful conclusions. The study also showed that ANTRAC farmers were experiencing cash flow problems. An important implication of both annual and monthly cash flow deficits for ANTRAC farmers in the 1978-79 crop season is that they had to find other means to cover these deficits. Alternative sources of liquidity to cover these deficits included borrowing in the informal credit system,

liquidating assets such as livestock and generating cash from non-agricultural activities.

The disastrous effects of the 1978-79 drought clearly indicate the precarious economic position of farmers in the Eastern ORD. A seemingly low cost technology such as animal traction may become a burden to farmers in marginal areas of the Eastern Region. Uncertain rainfall may explain why numerous farmers are reluctant to take the risk involved in participating in the medium term credit program.

An overall conclusion of the 1978-79 surveys is that animal traction has not contributed in any significant way to the improvement of the economic well being of the ANTRAC farmers of the Eastern ORD. Agricultural production and income of ANTRAC farmers have increased only modestly. But the ORD's ANTRAC program is at its early stages of introduction, farmers are still learning how to use the ANTRAC package, and the full range of traction equipment has not been adopted by the majority of farmers. Supporting services such as spare parts and veterinary care are rudimentary. Animal traction is mostly used for plowing. Ridging and weeding are still performed by hand.

The survey revealed that animal traction has been adopted by relatively well-off farmers who can generate non-farm revenues to meet the cash flow difficulties. In the Logobou zone, for example, 79 percent of ANTRAC farmers earned over 20,000 CFA in off-farm employment during the survey period, as compared with about 24 percent for TRAD farmers. In the Ougarou zone 29 percent of ANTRAC farmers earned over 20,000 CFA in off-farm revenue while no TRAD farmer earned this amount. Moreover, in comparing the number of

consumer durables such as radios, motorbikes, kerosene lamps, tin roofs, etc., the survey revealed that 25 percent of ANTRAC farmers owned at least one motorbike as compared with 2 percent for TRAD farmers. In addition, 61 percent of ANTRAC farmers owned at least one radio as compared with 18 percent of TRAD farmers. The research findings show that the average ANTRAC farmer is relatively wealthier than the average TRAD farmer and has access to off-farm income to cope with the risk involved in animal traction.

Our 1978-79 inquiry of the informal credit system of rural Eastern Upper Volta revealed that cash lending and borrowing transactions are highly localized at the village level and that the amounts of money involved are relatively small. The average cash loan per household is 3,547 CFA while the average cash borrowing is 890 CFA. On the average ANTRAC farmers lend more than they borrow (7,353 CFA versus 733 CFA). In general ANTRAC farmers on the average lend more than TRAD farmers (7,353 CFA versus 2,207 CFA). Also, ANTRAC farmers borrow less than TRAD farmers (733 CFA versus 945 CFA).

The main purposes of cash borrowings are to meet social obligations such as funerals, weddings, ceremonies and various family expenses. The purchase of food is the single most important use of cash borrowing especially for TRAD farmers. Cash borrowing for trading appears to be more important to ANTRAC farmers. There is virtually no cash borrowing for acquiring agricultural productive factors.

Other findings indicated that the number of cash credit transactions was higher than that of credit transactions in kind. For the 480 sampled households, the number of cash loans extended and cash

borrowings was 544 and 162, respectively, as compared with 89 loans in kind and 34 borrowings in kind. In-kind lending and borrowing involve mostly agricultural products, especially food grain. TRAD farmers account for 88 percent of the number of borrowings in kind and over half of such borrowings are used for home consumption.

The informal credit survey revealed that most credit transactions are for mutual assistance among farmers and their relatives at the village level with repayment expected but with no terms specified in most cases. In the few instances where time period for repayment is specified, the average time period is four to six months and never for more than a year. Moreover, there are no formal conditions set at the time of the transactions. In the final analysis the informal credit sector provides both cash and in-kind loans for unexpected socially required obligations and for consumption purposes.

The analysis of the informal credit indicated that the overriding role of the informal credit system is to provide cash and in-kind loans to farmers who experience cash and/or food deficits during the pre-harvest period. Seasonal patterns of credit transactions showed that most lending and borrowing transactions take place in the pre-harvest period (i.e., "hungry season" June through August) while repayment of loans occurs during the harvest and immediate post-harvest periods.

The informal credit system has two sub-markets: commercial and non-commercial. The commercial segment involves interest payments while the non-commercial segment which operates within families, neighbors, friends and relatives generally does not involve interest

charges. The role of grain traders in the informal credit was surprisingly modest. But this is because in actual practice, private traders use some farmers living in the village to purchase grain from farmers. Grain traders intervene indirectly by lending cash to farmers through a number of farmer intermediaries with an agreed upon repayment of grain at harvest.

The analysis of the structure of the informal credit sector showed a concentration of cash lending power in the hands of few lenders. In the commercial segment, for example, the top 17 percent of large cash lenders in the sample have extended 61 percent of all cash loans, with the top 5 percent providing about 25 percent of all cash loans. But the concentration of cash lending power varies widely from one village to the next. For example, while two cash lenders have granted 50 to 75 percent of the total number of cash loans in three villages, other villages had fewer cash commercial loans and did not show significant concentration of cash lending transactions.

In examining the relationships between the characteristics of households and credit transactions, the research findings revealed that there were proportionately more net lenders across all zones in the ANTRAC sub-sample than in the TRAD sub-sample. ANTRAC households tend to lend more than they borrow not only within their own sub-sample but also in comparison to TRAD households. Moreover, the survey showed that 50 percent of ANTRAC net lenders tend to have large households (11 persons or more) as compared with 20 percent of TRAD net lenders.

The survey results revealed that lending procedures in the informal credit sector were highly simplified in comparison with

the procedures of formal lending institutions. Since most lenders and borrowers are illiterate there is no paperwork. Credit procedures consist only of oral agreements between lenders and borrowers and loans are either denied or disbursed on a single visit. In those cases where commercial loans are extended to farmers by private traders lending costs may include commissions paid to intermediaries. In addition, informal lenders do not require formal collateral against loans. But, in general, lenders know their clients very well since they tend to live in the same village.

Transaction costs of borrowing generally include interest payment only in the commercial segment of the informal credit sector. Interest rates in most cases are restricted to cash loans with repayment in kind. The average monthly interest rate is 21 percent (i.e., 252 percent a year) and the average period of repayment is extremely short (four months on the average). But interest rates vary widely from one zone to the next and depends greatly on the period of repayment due to variations in prices of agricultural products across zones and over time.

Although concentration of commercial lending power accounts for the high interest rates we found that some lenders also provide loans without any interest charges to farmers in the non-commercial segment. For example, in Logobou a cash lender extended ten cash loans to farmers with no interest and only three loans with interest. Lenders also experience losses due to default especially in cases where loans are extended to relatives. When all these facts are taken into consideration, in addition to the opportunity costs of loanable funds,

one realizes that the actual interest rates are lower than they appear to be.

Repayment of loans in the informal credit system was higher than in the EORD formal credit program. For example, 73 percent of all cash and in-kind loans extended during the survey period of twelve months were repaid within that period. Due to the fact that a number of credit transactions took place toward the end of the survey it was not possible to record repayment for those transactions. Also, because in most cases there was no specific date for repayment it was difficult to classify unpaid loans as delinquent.

The study showed that farmers did not have access to credit from the informal credit system for securing new agricultural technology. This would indicate that in the absence of formal credit the majority of farmers would not be able to adopt the ANTRAC package.

The results of the survey also indicated that 92 to 95 percent of informal lenders would take tough measures against delinquent borrowers, including repossession and court action. This is in contrast with the lax measures taken by the EORD against delinquent borrowers. Thus, contrary to common belief, tougher measures taken by the ORD against delinquent borrowers are not likely to compromise the extension program of the ORD because they will not be in conflict with practices used in the informal credit system.

The study of farmers' attitudes toward investment and savings revealed that livestock is the most preferred type of savings instrument in the absence of formal savings institutions in rural areas. The survey also showed that the percentage of farmers who would channel their savings into animals (cattle, sheep and goats) is higher

than all other investment alternatives combined. Since many farmers seem to be inclined to invest in livestock in general and in cattle in particular this may indicate that the returns on livestock are higher than crop production and other non-agricultural activities.

The results of the survey also indicated that cash savings are modest in the EORD and the alleged widespread hoarding of cash is not supported by the research findings. Instead, farmers invest or save in the form of animals which they can convert into cash when needed. Finally, the analysis of farmers' attitudes toward modern banking and savings institutions showed that farmers were willing to deposit their excess cash in banks. The study revealed that farmers' potential response to savings is likely to be interest elastic. Since most farmers do not have any banking experience this should be treated with caution. But the attitudinal survey provides encouraging signals for saving mobilization policies in the Eastern ORD.

2. Policy Implications and Recommendations

The ultimate purpose of this study has been (1) to derive from the empirical information relevant policy guidelines to help development planners in the Eastern Region improve existing credit programs, and (2) to suggest alternative policies and programs which would bring about significant increase in production and improvement of farmers' income and welfare.

2.1 Improving the EORD's Existing Credit Program

The overall improvement of the ORD's ongoing credit programs may be achieved by:

(1) developing and extending profitable technological packages;

(2) improving the ORD credit delivery system;

(3) improving farmers' technical training and understanding of the credit program; and

(4) improving repayment performance.

2.1.1 Developing and Extending a Profitable Technological Package to Farmers

The results of this study have shown that a biologically stable and economically profitable sorghum and millet package was not available for ANTRAC farmers and that this problem is the root cause of many of the shortcomings of the credit program. Moreover, animal traction farmers were found to be facing severe cash flow problems especially during the first three to four years. It was also found that, although oxen increased in value over time, farmers are confronted with the awkward dilemma of actually getting through a "dry" financial period before benefiting from the capital gain resulting from the sale of their animals. But the prime objective of the current credit program is not to finance livestock raising enterprises, but to increase crop production. Therefore, the capital gain which accrues to oxen traction borrowers is a secondary benefit and should be regarded as such however substantial it may be.

The viability of a medium term credit program for animal traction in the subsistence agriculture of the Eastern Region hinges on four major factors:

(1) lowering the cost of the animal traction equipment;

(2) increasing production;

(3) improving market price incentives; and

(4) promoting cash crops in the farming system.

The reduction of ANTRAC cost to farmers can be achieved through cost sharing among several users, especially for oxen traction. Thus, credit for animal traction would be granted to small groups of farmers. The size of these credit groups will largely depend on the agro-climatic zones. In marginal areas where annual rainfall is barely adequate for agricultural production (i.e., central and northern parts) ANTRAC credit groups should be small (i.e., two to three farmers) because early planting is critical in these zones and the last farmer using the ANTRAC equipment may be penalized. A joint responsibility would be assumed by the group as well as a joint liability in terms of loan acquisition and repayment. It is thought that joint interests would be the best guarantee to make things work. But to avoid past mistakes of hastily setting up village credit groups or cooperatives where farmers do not know one another and/or do not have strong ties among them other than the objective of securing a loan (e.g., SATEC's credit experience in the 1960s), credit groups should be formed on the basis of the extended family or lineage. This would foster group cohesion and solidarity. The credit groups will not replace but complement existing village group organizations. Village credit committees will deal with these new sub-groups instead of individual borrowers.

Credit groups would have the advantage not only of lowering ANTRAC cost to individual farmers but also borrowing transaction costs as farmers will apply for and repay loans through the village level credit committee. Although there is a cost to the lending

agency for the establishment of credit groups, cost per loan would decrease by lending to farmer groups instead of to individual farmers. A problem which may arise in a joint ownership of an ANTRAC package is the sharing of maintenance cost of equipment, animal feeding and veterinary care expenses. But one may reasonably expect that solidarity among group members would solve this problem.

Cost of ANTRAC technology to farmers can also be lowered by extending the current five year term for oxen package to seven years and the one year grace period to two years. Donkey traction credit terms should be extended from four years to five years but because the donkey package is less costly the current one year grace period should be maintained. Interest rates should be adjusted upward to offset time effects on the value of the loan repayment. Matourkou's practice of charging interest on capital even on the years of grace should be adopted. The option of using one ox for traction should be carefully considered for the obvious reason that it is less costly but only if its technical and economic performance is higher than that of donkey traction. Also, farmers who are able to provide their own draft animals should be excluded.

In order to increase crop yields emphasis should be placed on farming systems research (FSR) where the farmer is an active partner in the process. Farming systems research should start with the selection and dissemination of the best local varieties followed by on-farm trials of the short cycle varieties of sorghum and millet of the south (Logobou and Pama areas). These trials should be conducted in the central and northern parts of the region where rainfall is a serious constraint. Farming systems research should give immediate

attention to carrying out on-farm trials of local rock phosphate which is available in abundant quantities in the region.

Since the profitability of the technological package ultimately depends on prices received by farmers there is also a need for improving the efficiency of marketing services. There is no point in trying to push for an increase in production if farmers are facing prices that would not reward them for their effort. In this respect the poor road network of the region constitutes a serious impediment to beneficial effects of competition among traders. In most cases, monopsony powers are the result of poor transportation infrastructure that prevents many potential buyers from competing in remote areas. It is important to emphasize the necessity of upgrading existing trails and building feeder roads which will link producing zones to centers with higher effective demand for farmers' produce.

The ORD should help in the marketing of farmers' products. Although for a number of reasons the ORD does not currently participate in the marketing of agricultural products, it should nevertheless play a role in this area to help farmers get better prices for their products. It is essential that farmers who have taken a loan from the ORD can sell their products at reasonable prices. The ORD should stand ready to buy these products directly or to play the role of intermediary between farmers and other potential buyers, especially the national grain marketing board (OFNACER).[1] This is a responsibility which cannot be disregarded by the ORD because failure to

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[1] OFNACER: Office National des Céréales.

provide this service to farmers participating in the credit program can result in poor loan repayment. This may also have serious consequences on the overall extension program as farmers may refuse to follow technical advice or adopt new technologies.

As was mentioned earlier, food crops are primarily grown for home consumption and the prospect of generating cash income from such crops is not very promising. The development of cash crops has always been met with mixed feelings by a number of government officials and by some external donors. For some government officials these mixed feelings are often more stirred up by emotions rather than reason because forced production of cash crops during the colonial era[1] is still vivid in their minds. Also, there is a strong belief that cash crops will be produced at the expense of food crops. For some external donors the feeling is that cash crops ultimately benefit largely state-owned corporations and their international partners. Still some bilateral aid agencies simply would not support certain kinds of cash crops as this would run against their home countries' interests.[2]

The only valid reason for discouraging the expansion of cash crops, in the opinion of the writer, is when cash crops conflict with food crop production. Actual evidence has demonstrated that the opposite has occurred. For example, the expansion of cotton production under a World Bank-financed project in the western part of Upper Volta has not been shown to be detrimental to food crops since

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[1]Crops grown to supply colonial industrial needs: peanuts, cotton, sesame.

[2]USAID, for example, would not financially support the development of cotton.

this region is a grain surplus area. The fact is that when cotton fields receive proper amounts of fertilizers in a well-managed rotation system, subsequent effects on yields of cereals are substantial on those fields. Hence, sound agronomic practices can increase the yields of both cotton and food crops. Although cotton is not the only cash crop, it is the most profitable at present in Upper Volta. Peanut is also a cash crop but the fact that prices are not stable and markets are not as well organized as is the case with cotton, makes it less attractive. In any event, unless cash crops are introduced in farmers' operations, one cannot envision how a credit program can be successful in the Eastern Region.

2.1.2 Improving the ORD Credit Delivery System

To improve the ORD credit delivery system four major aspects should be considered:

(1) institutional restructuring;

(2) better planning and scheduling of various credit activities;

(3) reducing the cost of lending; and

(4) better bookkeeping procedures.

As the credit program keeps expanding, the credit component of the ORD structure should have a separate bureau of its own instead of being confined as a sub-section of the Community Development Bureau. In addition, there is a need for strengthening the analytical capacity of the credit bureau by upgrading its professional staff. Moreover, with the creation of the national agricultural credit fund (CNCA) it is advisable to have a credit agent at each sector and

sub-sector level who would be responsible for processing village group loan applications and collection of repayment. These local credit agents would report to the credit bureau at headquarters. This would ease the burden on extension agents enabling them to be more effective in carrying out their extension responsibilities.

It was shown earlier that conflicting responsibilities, poor coordination of activities among various ORD bureaus and lack of planning and scheduling of different operations (collecting and placing orders for various equipment and other inputs) have resulted in untimely delivery of both draft animals and equipment. Hence, improved planning of all operations is required. All orders for traction equipment should be placed at the end of the agricultural season and no later than the end of October. This would allow enough time for equipment to be ordered and obtained by the end of December. All equipment and other inputs should start moving from headquarters to sectors as early as January and no later than April. This would avoid the problem of late deliveries especially with the poor road conditions in the rainy season.

Reduction of lending cost can be achieved by extending credit to farmers through village credit committees. As was mentioned before credit agents would be working closely with these credit committees rather than individual farmers. Also a more efficient use of vehicles to deliver inputs to farmers is to be taken seriously especially with the soaring cost of energy. Use of vehicles for transportation of inputs should be combined with marketing operations to avoid empty rides to and from remote areas.

The current interest rate of 5.5 percent is unnecessarily low. The rate should be increased to at least the level of inflation, which is 12 to 13 percent. Since the survey revealed that the nominal interest rate is not viewed by farmers as critical in their decision to use credit an increase in interest rates should be pursued vigorously.

Finally, better bookkeeping is essential for improving the management of loanable funds. It would be helpful for example to keep the credit accounts separate from other ORD operation accounts. Also, a separate accountant should be hired to handle all credit accounts; he should report to the new Credit Bureau Chief (to be created). Bank accounts for the credit program should be separated from the ORD bank accounts. This would eliminate past confusion. In addition, external donors should provide financial management assistance to the ORD and help in the training of accountants to assure better bookkeeping procedures. Further, the computerized system of billing farmers should be maintained if cost allows to do so. This would simply eliminate lengthy paperwork and reduce errors. Also, this would enable the credit office to detect fraud and embezzlement by credit agents.

2.1.3 Improving Farmers' Technical Training and Understanding of the Credit Program

It was shown that farmers were poorly trained in the use of their equipment and draft animals. An effort should be made to solve this problem. The practice of using bouviers (skilled traction farmers) should continue and broaden. It may be necessary to set up permanent centers where farmers and animals are trained. Such a

program for example would require potential animal traction farmers to be trained a year prior to obtaining their traction package. This would insure that any traction farmer would start on the right footing.. Moreover, although the Matourkou credit program was unique in many respects, its farmer training component may be used by the Eastern ORD. The method used by Matourkou in teaching farmers how to figure out the values of installments, interest charges and outstanding balances would help farmers understand their credit transactions and foster their trust in the lending institution. Also, the current ORD's functional literacy program should be strengthened, broadened and accelerated.

2.1.4 Improving Repayment Performance

As was clearly demonstrated in this study, loan delinquency and default are serious threats to the financial viability of the ORD's credit program. The following corrective recommendations are suggested:

(1) Inputs should be delivered on time. This was already mentioned earlier in connection with the improvement of the ORD's credit delivery system.

(2) Farmers should be informed ahead of time when credit agents will be collecting repayment so that they are not taken by surprise and find an excuse to evade repayment.

(3) Credit agents should not be removed or reassigned to other places before the end of loan collection period because new agents are not known to the farmers.

(4) Tougher measures including firing and/or court action should be taken against credit agents guilty of embezzlement. But an incentive system should be established to reward good credit agents.

(5) Revise the terms of repayment of medium term loans to allow for longer periods of repayment. Given that the medium term credit program is very costly relative to farmers' income, a longer period of repayment with smaller installments should be less of a burden.

(6) Tougher action should be taken against farmers who are delinquent in repaying their loans. The study of the informal credit system has shown that tough collection measures were acceptable in rural areas. In fact, because of the shame associated with borrowing, repossessing a credit item may be considered disgraceful and a delinquent borrower would rather repay than lose face.

(7) Repayment of loans can also be improved by extending loans to farmers through village groups. More responsibilities should be given to local organizations in terms of provision of loans to and collection of repayment from individual farmers. But to cover potential losses due to loan delinquency, a down payment of 10 or 15 percent of the total village group loan should be required. These sums of money should be kept in a savings account and used to cover potential losses. When the total loan has been repaid, both down payment and interest earned should be returned to the village group.

(8) The ORD should consider in-kind repayment of loans by farmers, especially food grain. There are several advantages to repayment in kind. Prices used to value the repayment in kind would

be the official price which is generally higher at harvest than the market price. If the market price happens to be higher the farmer can sell his produce in the market and repay his loan with the proceeds. If the market price is lower than the official price he may repay in kind. The ORD can sell the products to OFNACER. Repayment in kind should help farmers repay their loan and should enhance farmers' trust and confidence in the ORD.

Because it takes time for farmers to learn to use new farming practices the ORD should pursue an incremental approach in helping farmers make the transition from hand cultivation to animal traction. The first step is to teach farmers how to use a plow. Second, those farmers who have been plowing for a certain number of years (and are convinced that this alone gives better yields) can obtain a weeder. The third step is to obtain a planting device. This three to four year sequence is necessary to allow time for the learning process. But the sequence should vary depending on the zone. In zones where the rainy season is short (Central, Eastern and especially Northern parts) early planting is critical. Time lost in plowing before planting may have disastrous effects. In this case maybe a weeder should be introduced in the first phase.

2.2 Lessons from the Informal Credit System: Alternative Lending Programs and Policies for Savings Mobilization

The analysis of the informal credit system has revealed the following: first, farmers do borrow cash to meet both consumption and non-consumption needs. Second, interests charged on loans obtained from money lenders in the commercial segment are extremely

high due to concentration of lending power. Third, livestock appears to be the preferred investment instrument especially cattle. Fourth, although modest there is a potential for saving and farmers are likely to be willing to deposit their money in savings institutions.

From the four points above, three major policies can be derived:

(1) alternative credit programs can be designed to respond to farmers demand for cash to meet consumption needs and other cash expenditure requirements;

(2) credit for livestock production should be seriously considered; and

(3) an appropriate institutional arrangement to mobilize savings should be contemplated, although this would require a more indepth study to evaluate the breadth of the financial resources actually available.

2.2.1 A Hungry Season Lending Program

The idea of a hungry season lending program is not new. As was seen in the historic review, such a credit program existed in the colonial era but it was discontinued after a few years. Farmers resort to the money lender despite higher interest rates because there is no formal credit competing with money lenders within the purposes which they lend money for. While money lenders provide funds for consumption, funerals and weddings, the ORD credit program does not lend for these purposes. Furthermore, the cereal banks currently being tried deal with only part of the farmers' problems, that is the possibility of repurchasing grain from the cereal bank at a price lower than the market price. Still farmers need to have cash

in order to make such purchases. In addition, some farmers may need cash for purposes other than consumption and cereal banks do not lend cash to meet these expenses.

To meet cash expenditure requirements farmers should be able to have access to cash loans during the hungry season regardless of the purpose such borrowings are intended for. Such a lending program could rely heavily on local institutions. For example, it was seen that in a number of cases, there was a trustworthy person in the village who kept money for other people. These persons may be identified and associated with setting up a hungry season lending program. Also, village leaders well respected by farmers could be used in these special credit institutions to insure high repayment.

In order for this special lending program to work it has to be perceived by farmers to be permanent. The perception of permanence in the eyes of the borrower is important. One of the reasons why money lenders are successful is because they are always there when the farmer needs them. In addition, lending procedures should be kept as simple as possible. Unnecessary paperwork and red tape should be eliminated.

The cereal banks also may in the long run play the role of a hungry season cash lending institution. Farmers could borrow cash from the cereal bank and repay in cash or in kind. Interests charged should be reasonable unlike those imposed by the money lenders. An example of a hungry season lending program that works is currently in operation in the Ivory Coast. Repayment has been very high to the

extent that the National Agricultural Development Bank (BNDA) has increased the volume of its loanable funds.[1]

2.2.2 Alternative Lending Program for Livestock Raising

A second alternative lending program worth considering is lending for cattle raising. This special credit program can be linked to the animal traction program and would work as follows: loans would be given to farmers to buy two young oxen (two years of age maximum). Repayment of the loan would be required at the end of the second year when the animals are four years old. But interests should be charged on the loan from the time of the loan. Further, at the end of the second year the farmer would have a choice between selling his animals and repaying the entire loan with interests in a single payment, or keep his animals if he chose to enter the animal traction program. If he chose to obtain traction equipment he should be given another year grace period on the loan of the equipment to allow time for learning to use the traction package. Repayment of the animal loan would start at the end of the second year but only at the end of the fourth year would the borrower be required to start paying both the loan of the animals and the loan of the equipment. The loan package should be repaid at the end of the seventh year.

The program has the important advantage of being less costly to the farmer since the initial loan is smaller due to the purchase of younger animals. In addition, there is no loss to the lending institution since interest is charged even in the two year grace

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[1]Banque Nationale pour le Développement Agricole: Prêts de soudure, The Staff; BNDA [1973].

period. Also, repayment on equipment starting in the fourth year, would have the effect of spreading the burden of repayment over a longer period of seven years. Another advantage for the farmer is that he could choose to enter the animal traction program at the end of the second year when the animals are old enough for traction or he could sell his animals and repay the loan with interest.

2.2.3 Mobilizing Savings

Given farmers' positive attitude toward savings there are favorable prospects of establishing savings institutions to mobilize savings in rural areas. But, further indepth studies are required to get hard data on the importance of financial resources that can be mobilized. It is likely that farmers would respond positively to adequate interest rates offered on savings. This would require an appropriate institutional arrangement which should involve the active participation of farmers themselves.

3. Need for Further Research

An important area that needs to be investigated is the possibility of mobilizing savings in rural areas. Inasmuch as the current ORD credit program is almost exclusively financed by external donors which will be eventually phased out, it is vital to find alternative resources. The rural sector may turn out to be one of the most important sources of loanable funds. Another important issue which was not addressed in this study due to lack of data is the relationship between loan repayment performance, size of farm and level of income.

APPENDICES

APPENDIX I

APPENDIX I

FORMAL CREDIT: OTHER INDICATORS OF LOAN REPAYMENT PERFORMANCE

There are two other indicators which may be useful in dealing with the repayment performance of agricultural credit institutions: (1) the Aging of Arrears, and (2) the Repayment Index.

1. The Aging of Arrears

Aging of arrears is probably one of the most useful measures of repayment performance. In classifying arrears by their age the financial analyst is able to assess those arrears which have a reasonable chance of being collected and those which are simply so long overdue that it may be just as wise to consider them as potential losses. The aging of arrears indicator may provide a rough indication of repayment performance by comparing arrears for successive periods. For example, if at the end of last year the percentage of arrears more than three months overdue was 80 percent and at the same period in the current year the percentage is 50 percent, it may be said that performance has significantly improved. In fact what is really critical is not necessarily the proportion of arrears, but rather the value of arrears in each class.

Problems involved in the aging of arrears indicator include the troublesome question of handling partial repayments. For example, if

a 20,000 CFA loan is to be repaid in four years by equal installments of 5,000 CFA each year, how would an overdue balance of 7,500 be classified? Two years or a year and a half overdue? The conventional method usually employed in the determination of the age of the arrears in such cases is to divide the amount in arrears by the amount of a single installment [1977]. If A is the amount in arrears and I is the amount of a single installment (i.e. amount per year, or per month or whatever the maturity period is), the age of the arrears would be:

$$T = \frac{A}{I/t} = \frac{A}{I} \times t$$

Where T is the age of arrears (in months, years, etc.)

t is the period of maturity of a single installment (i.e. a month, a year, etc.).

Thus in the above example, the age of the 7,500 CFA in arrears would be:

$$T = \frac{7,500}{5,000/\text{year}} = 1.5 \text{ year}$$

Hence this arrear would be classified as a year and a half overdue. Likewise a 2,500 CFA in arrears would be in the class of half a year (six months) overdue. Indeed

$$T = \frac{2,500}{5,000/\text{year}} = .5 \text{ year or } 6 \text{ months}$$

In addition to the above difficulty there is a second problem related to whether or not interest is calculated on arrears. There are instances when it is not worth the time and energy to perform bad debt computations when the probability of collection is extremely low.

The third problem is how to handle situations involving multiple partial repayments. If aging is based on the date of the last partial repayment the result may be misleading. Indeed, partial repayments, even when they are frequent, may still be lagging behind the level of arrears as installments mature. The last repayment date, however, is useful in dealing with regular repayers who are often slow in making repayments but are expected to do so.

2. The Repayment Index

The repayment index is certainly one of the most useful measures in managing lending on an individual borrower basis. This indicator is expressed as follows:

$$R = 1 - \frac{\sum_{t=1}^{n} {}^{a_t}I}{\sum_{t=1}^{n} {}^{a_{max}}I}$$

where R: repayment index number

$\sum_{t=1}^{n} {}^{a_t}I$: interest compounded on amounts in arrears over the entire life of the loan (net of interests credited for prepaid balances) from period one to period n.

$\sum_{t=1}^{n} {}^{a_{max}}I$: amount of interest on arrears in a total default situation (i.e., no repayments at all) from period one to period n.

From the above equation two extreme situations may be envisioned. The first extreme situation is that where R = 0, that is when

$\sum_{t=1}^{a_t} I = \sum_{t=1}^{a_{max}} I$. Such a situation occurs when there is a total default from period one to period n. The second extreme situation is that where R = 1, that is $\sum_{t=1}^{a_t} I = 0$. This situation takes place when all repayments of installments are always made on time so that arrears at any point in time are zero, which means that interest on arrears is nil.

The repayment index is a rough guide for assessing the credit rating of individual borrowers and for the total lending portfolio outstanding. Borrowers may be classified according to their repayment index. The credit institution may decide that all borrowers of class 1 may be eligible for a future loan the amount of which would be equal or superior to the previous loan (e.g. 100 or 120 percent); those of class 2 up to 85 percent of their previous loans; the third class may be eligible under certain specified conditions.

The repayment index may also be used to compare borrowers in different regions. Borrowers may be classified according to the repayment index on a region by region basis or even on a village by village basis. The information thus obtained would help at identifying weak credit programs by village and region. Likewise, it is possible to use these indexes as rough measures of impacts of different levels of extension effort, or access to market. Finally, the repayment index can provide an objective basis for rewarding both good repayers and good credit agents alike.

The repayment index has neither received the attention it deserves nor has it been widely applied by agricultural credit institutions or commercial banks. As Von Pischke [1977] points out, this may be due to the fact that it is a relatively new concept which has seldom, if at all, been mentioned in the agricultural credit literature.

APPENDIX II

APPENDIX II

EORD: AVERAGE ANTRAC AND TRAD HOUSEHOLD CROP PRODUCTION IN 1978-1979

TABLE II-A

EORD: Average ANTRAC and TRAD Household Production in 1978-1979 of Nine Most Important Crops[a] by Zone

Zone	Number Farmers	Major Crops Produced (in kgs.)								
		Sorghum Millet Niadi	Maize	Rice	Peanuts	Cotton	Soybeans	Bambara Nuts	Beans	Sesame
						TRAD				
Bogandé	33	872	41	10	102	3	--	2	44	18
Mani	36	3517	149	--	195	7	--	9	30	25
Piela	18	406	21	92	198	--	--	11	27	22
Diabo	18	751	69	22	55	--	4	22	147	--[b]
Logobou	36	1921	102	76	180	3	7	28	301	--
Partiaga	36	2080	123	207	12	--	15	5	51	--
Yondé	34	875	52	3	81	--	--	20	181	--
Diapangou	18	632	149	--	16	--	--	8	182	2
Botou[c]	37	1256	127	--	38	18	--	5	141	8
Kantchari	38	2829	84	7	8	12	1	16	221	--
Ougarou	18	4006	157	43	14	3	2	9	36	--
Pama	32	2755	341	169	39	19	49	29	185	--
Total: TRAD	351	1878	116	57	81	6	7	14	134	6
						ANTRAC				
Piela	18	609	34	145	218	--	6	13	55	23
Diabo	50	1531	135	82	124	29	74	20	269	1
Logobou	18	1735	143	151	165	30	9	27	150	5
Diapangou	17	1523	301	30	273	1	131	5	408	4
Ougarou	18	4384	240	392	120	3	218	20	69	--
Total: ANTRAC	121	1748	160	146	161	16	91	18	181	5

SOURCE: Farm Survey Data, 1978-79.

[a]Excluding yams and sweet potatoes.

[b]--Less than 1 kg. on average.

[c]North of Fada

APPENDIX III

APPENDIX III

INFORMAL CREDIT: NUMBER OF CASH BORROWERS AND CASH BORROWINGS

TABLE III-A

Informal Credit: Distribution of Cash Borrowers by the Number of Cash Borrowings

	ANTRAC		TRAD		TOTAL	
	Number of Cash Borrowers	Number of Cash Borrowings	Number of Cash Borrowers	Number of Cash Borrowings	Number of Cash Borrowers	Number of Cash Borrowings
1 Cash Borrowing	13	13	59	59	72	72
2 Cash Borrowings	1	2	22	44	23	46
3 Cash Borrowings	1	3	7	21	8	24
4 Cash Borrowings	--	--	5	20	5	20
Total	15	18	93	144	108	162
Percentage of Cash Borrowers	13.9		86.1		100	
Percentage of Cash Borrowings		11.1		88.9		100

SOURCE: Farm Survey Data, 1978-79.

TABLE III-B

Informal Credit: Number of Cash Borrowers Relative to Number of Sampled Farmers

	ANTRAC	TRAD	TOTAL
Total Number of Sampled Farmers	125	355	480
Number of Cash Borrowers	15	93	108
Percentage of Cash Borrowers	12	26.6	22.5

SOURCE: Farm Survey Data, 1978-79.

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