

The Characteristics of Informal Financial Markets in Africa

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1. INTRODUCTION

National governments and international aid agencies commonly intervene in financial markets in Africa. These interventions use a substantial amount of resources and may have dramatic macroeconomic consequences (World Bank, 1989). Over the past few decades there has been a rising chorus calling for financial market liberalization. The recommendation that credit markets be liberalized is based on simple and compelling economic logic: interest rate ceilings lower the supply and raise the demand for credit, leading to administrative rationing and associated rent-seeking behavior, while discouraging saving mobilization. This analysis and the consequent recommendations undoubtedly are substantially correct for the formal sector (although caveats based on the theory of financial markets with incomplete information should be added). However, the vast majority of financial transactions occur outside the boundaries of the regulated banking sector. An understanding of the economics of this informal financial sector is a prerequisite for satisfactory financial policy analysis.

There exists a substantial and well-developed literature on the economic theory of credit markets and saving decisions in economies characterized by incomplete markets and imperfect information. This theory is directly relevant to informal financial transactions in Africa. In addition, there is a substantial body of empirical research which provides descriptions of the institutional arrangements through which financial transactions are effected in Africa, and which permits some (limited) quantification of the relative importance of various institutional arrangements. Lacking, however, from most of the literature on informal finance in Africa is an integration of economic theory with empirical observation. This paper does not rectify that inadequacy. However, we provide: (1) a brief review of both the relevant theoretical and empirical literature; (2) an account of the usefulness of the theoretical literature for interpreting the empirical research on informal finance in Africa; (3) brief notes on some of the implications of the economics of incomplete information and imperfect contract enforcement for financial policy in Africa; and (4) suggestions for a research program which integrates detailed empirical observation with relevant theory.

Resource transfers over time are essential in the seasonal agricultural economies of the rural areas of many poor nations. It is not surprising that much effort has been placed into

attempts to understand rural loan transactions and the role of credit in the rural economy by focusing on this central aspect of credit transactions (see most recently Datta et al. [1988]). This was not always the case. Prior to the 1970s, rural credit was often viewed as a direct input into agricultural production. As with any other factor of production, an expansion of the supply of credit would lead to an increase in agricultural output. The seminal work of the "Ohio State" school of economists (see the Spring Review of Small Farmer Credit, Adams [1971]; Von Pischke, Adams, Graham [1983]; Adams, Graham and Von Pischke [1984]) transformed the literature. Although these authors were concerned primarily with the design of formal sector interventions, they also examined the operation of informal rural credit markets. The conclusion they reach, that the moneylender is "an efficient fellow who provides a valuable service to his clients," as Bell (1988, p. 767) summarizes, is less important than their approach. They pioneered the investigation of the structure on informal credit markets and in particular paid close attention to transactions costs and patterns of competition (the earliest important example is that of Bottomley [1963a; 1964]). Their work firmly established the notion that rural credit transactions occur in a market which transfers resources across people and over time.

In addition to performing their core role in the intertemporal allocation of resources, however, credit transactions reflect the economic environment within which they occur. In the rural areas of poor countries this environment is characterized by objective risk, with unpredictable variations in income as a result of weather and other exogenous processes. Complete insurance markets are absent, so credit transactions take on a special role in allowing resources to be transferred in response to income shocks. The environment also may be characterized by costly acquisition and asymmetric distribution of information. Moral hazard and adverse selection therefore may arise, along with special organizational features that serve to mitigate or accommodate the problems caused by these information asymmetries. It will be seen that considerations of risk and information are central to the special character of rural credit transactions, and that an effort to focus exclusively on the transfer of resources across time will generally be misleading.

The theoretical analysis of financial markets in developing countries has been

transformed through the application of the theory of economic behavior under conditions of incomplete markets and imperfect information. A large number of theoretical papers have explored the implications of imperfect information and incomplete markets for contractual forms in credit markets in low-income rural settings.¹ These deviations from the simple paradigm of competitive equilibrium seemingly provide a new theoretical foundation for policy intervention designed to correct market failure. In fact, a reference to the important work by Stiglitz and Weiss (1981) is now commonplace in (academic) discussions of credit market policy (e.g., Braverman and Guasch (1986)). Of course, an observation that a credit market is subject to moral hazard or adverse selection in itself does not provide an economic rationale for intervention to correct a market failure because the incomplete information equilibrium may be constrained Pareto efficient. Nor does economic theory generally provide sufficient guidance to predict the distributional or efficiency consequences of a proposed policy change. A rich set of empirical knowledge is required before such conclusions can be drawn. Besley (1992) ends his review of the literature on credit market interventions with the conclusion that

there may be good arguments for intervention and some are based on market failure. However, as one begins to unpack each argument, there is a gradual realization that given the present state of empirical evidence on many relevant questions, it is difficult indeed to pinpoint when a credit market intervention is justified. There can be little doubt that empirical work which can speak to these issues is the next challenge if the theoretical progress is to be matched by progress in the policy sphere. (p.34)

We see, therefore, an important opportunity for further research. If financial policy analysis in Africa is to progress beyond on the one hand sophisticated theorizing based on inadequate empirical knowledge and on the other descriptions of extant financial institutions, we must conduct research which is based on detailed observation guided by the theory of financial transactions when information is incomplete and enforcement of contracts is imperfect.

The remainder of the paper is organized as follows. Section two provides simple

¹ See Bardhan (1989) and Alderman and Paxson (1992) for bibliographies.

theoretical models which incorporate some of the main lessons that can be derived from the recent theoretical literature. Section three is devoted to a brief review of the extant empirical literature on informal finance in Africa. Throughout, our intention is to evaluate the extent to which the theory can make sense of the available empirical evidence. We discuss the implications for financial policy of the available theoretical and empirical literature and provide some suggestions for further research.

2. ON THE THEORY OF INFORMAL FINANCE IN AFRICA

The theoretical literature on informal financial markets has drawn most (but not all) of its inspiration from evidence on financial transactions in developing countries outside of Africa. The extent to which this theory can provide insight into informal finance in Africa is not yet determined. In this section, we provide simple example models of informal financial transactions based on this larger theoretical literature. We do not expect that any of these examples will be directly applicable to any particular financial market anywhere. However, we have chosen examples which have the potential of illuminating the salient features of many informal financial markets in Africa.

This section contains three sub-sections. The first provides a set of examples of credit transactions when information is incomplete. In this section, we suppose that lenders do not have complete information with respect to the characteristics of potential borrowers. In the second section, we provide an example of credit transactions when contracts are not perfectly enforced, that is, when there is no external contract enforcement agency (such as the legal system) which forces borrowers to repay their loans. In the third and final section, we provide a brief theoretical account of some of the main characteristics of informal saving behavior in Africa. In each of these three sections, we provide notes on: (a) potential implications of the analysis for financial policy making; and (b) opportunities for further research.

A. Information Asymmetries in Financial Transactions

A loan involves the exchange of current resources for future resources. It therefore

involves a promise. If a loan transaction occurs in a risky environment and if a complete set of markets for contingent commodities does not exist, then the promised transfer of future resources may not be certain. The character of the loan transaction will then be influenced by the risks faced by the parties involved, and by their knowledge of each other and the activities they undertake. In this section, we focus exclusively on one particular form of information asymmetry: the possibility that lenders do not have perfect information regarding the characteristics of potential borrowers.

There is a great deal of heterogeneity among farmers in any village. While lenders might have a good idea about the average characteristics of the pool of potential borrowers, they may not have complete information concerning the characteristics of any particular borrower. This may lead to problems of adverse selection. A simple model permits us to examine the consequences of adverse selection in credit markets. This section is outlined as follows: first an equilibrium with complete information is described to provide a point of comparison once we add information asymmetries. In subsection 2, we describe a competitive equilibrium with adverse selection. We show how adverse selection can operate to effectively exclude some borrowers from the credit market, despite the fact that these same borrowers could profitably borrow if lenders knew their characteristics. In fact, it is the "good" borrowers, with access to relatively safe land, who do not borrow. Also in this section we provide a simplified version of the Stiglitz-Weiss credit rationing model to show how credit rationing can emerge in the absence of government regulation of interest rates. In subsection 3, we consider the interaction between well-informed local lenders who face a high opportunity cost of capital (perhaps due to highly seasonal demands or highly covariate risks within the region) and poorly-informed (perhaps institutional) lenders who have access to capital at a lower opportunity cost. We show how the information disadvantage of the external lenders can make it difficult to break into the local market, despite their advantage with respect to the cost of capital. Information asymmetries, therefore, can provide an explanation for financial market fragmentation.

We restrict our attention in this section to commercial lenders. Friends and family, presumably, have good information concerning the characteristics of potential borrowers (see,

e.g. Udry, 1990). This does *not* imply that information asymmetries are unimportant for the structure of the credit market when it is predominately comprised of loans amongst friends and family - the very fact that these are the loans which are made reflects patterns of information. However, it is commercial credit transactions which are likely to be subject to the most severe adverse selection problems.

To begin our simplifications, we assume that all borrowers and lenders are risk neutral. This eliminates an important motivation for borrowing: the desire to smooth consumption in the face of fluctuating incomes. We return to this theme below. For now, we focus exclusively on credit as a source of working capital for productive activities which take time. Suppose that farming requires no effort, but that there are two types of potential borrowers indexed by $t \in \{1, 2\}$. Type 2 borrowers have access to land which is riskier but potentially more lucrative than that used by type 1 borrowers. One unit of capital is needed to farm, and farmers have no wealth of their own. Land of type t yields 0 if there is a harvest failure and $R(t) > 1$ otherwise. The probability of a successful farming season is $\pi(t)$. So $\pi(1) > \pi(2)$, and $R(1) < R(2)$. In fact, we suppose that the expected return to farming each type of land is identical ($\pi(t)R(t) = \bar{R} \forall t$).² Also suppose that the reservation utility of the different types of borrowers is constant ($W(t) = W \forall t$). If the lender offers an interest factor (which is 1 plus the interest rate) of i , the returns to the lender and the borrower are as follows:

	Borrower	Lender
Success	$R(t) - i$	i
Failure	0	0

The expected utility of a borrower is $U(i, t) = \pi(t)[R(t) - i]$ and the expected return to the lender from a loan at rate i to a type t borrower is $\Pi(i, t) = \pi(t)i$. In writing this table we have made two extremely important assumptions. The first is that the loan contract has limited liability. If the borrower has a crop failure, she has no funds to repay and the lender receives nothing. Second, we have assumed away problems of enforcement. If the harvest is successful, the

² That is, the distribution of returns for type 2 projects is a *mean-preserving spread* of the distribution of returns for type 1 projects.

borrower repays. We address enforcement difficulties below.

1. Competitive Equilibrium with Complete Information

As a benchmark, we first assume that perfectly informed lenders compete to make loans. We assume that lenders have access to a risk-free capital market with a return of ρ ($R > \rho > 1$).³ Lenders can distinguish between the types of borrowers, so they can offer different interest rates to each type. An equilibrium with lending is characterized by a pair of interest factors (one for each type of borrower) $(i_1(t))$ such that: (a) $U(i_1(t), t) \geq W$; (b) $\Pi(i_1(t), t) \geq \rho$; and (c) there is no interest rate $i(t)$ which yields a return greater than or equal to ρ to a lender and which a type t borrower would prefer to $i_1(t)$. If there is an equilibrium with lending, it is characterized by solving for each t :

$$\begin{aligned} & \underset{i}{\text{Max}} \quad \pi(t)(R(t)-i) \\ (1) \quad & \text{subject to } i\pi(t) \geq \rho \\ & \text{and} \quad \pi(t)(R(t)-i) \geq W. \end{aligned}$$

There will be lending in equilibrium to both types if $\bar{R}-\rho > W$, otherwise neither type will receive loans. If there is lending, $i_1(t) = \rho/\pi(t) \forall t$, and the lender makes zero expected profits. Substitution of this equilibrium relation into the borrower's utility function shows that $U(i_1(t), t) = \bar{R}-\rho \forall t$. If there is lending, both types of farmers will borrow, and $i_1(1) < i_1(2)$.

2. Competitive Equilibrium with Adverse Selection

Suppose that the lenders in the competitive credit market cannot differentiate between borrowers of different types, though they know the relative proportions of type 1 and 2 farmers in the village. First note that at any given interest factor i :

$$U(i, 1) = \pi(1)(R(1)-i) < \pi(2)(R(2)-i) = U(i, 2), \text{ but } \Pi(i, 1) = \pi(1)i > \pi(2)i = \Pi(i, 2). \text{ So}$$

safer borrowers achieve a lower expected utility from a given interest factor, but provide

³ We therefore have assumed away a potentially important source of credit market fragmentation - informal lenders themselves probably do not have access to a smoothly operating capital market. Even with this assumption, we will see that fragmentation occurs.

higher expected income to the lender. These results follow directly from the limited liability nature of the credit contract, which limits the loss faced by a borrower when her crop fails.

Recall that the participation constraint is $\pi(t)(R(t)-i) \geq W$. Obviously, $\partial U(i,t)/\partial i < 0$.

As the interest factor rises, the borrower's utility falls. Define $i^*(1)$ as the highest interest

factor at which type one borrowers are willing to borrow. $i^*(1) = \frac{\bar{R} - W}{\pi(1)}$. Define $i^*(2)$

analogously. $i^*(1) < i^*(2)$, so as the interest factor increases, households with safer projects drop out of the pool of borrowers first. This is the problem of adverse selection. For interest factors less than $i^*(1)$, all potential borrowers demand credit. If the interest factor increases past $i^*(1)$, the relatively safe type 1 borrowers stop demanding credit, while type 2 borrowers continue to demand loans. As the safer borrowers drop out of the market, lender income discontinuously falls. Figure 1 illustrates the relationship between the interest factor charged by lenders and the expected income from lending. Lender income rises with increases in the interest factor until $i = i^*(1)$. Suppose $p(1)$ is the proportion of the population of potential borrowers who are type 1. Then the expected income from a loan at interest $i \leq i^*(1)$ is $E\Pi(i) = p(1)\pi(1)i + [1-p(1)]\pi(2)i$. As i increases past $i^*(1)$, type 1 borrowers drop out of the market and lender income falls. As the interest factor continues to increase, lender income once again increases until $i^*(2)$, at which point type 2 borrowers stop demanding credit and no loans are made. For $i^*(1) < i \leq i^*(2)$, $E\Pi(i) = \pi(2)i$. For $i > i^*(2)$, $E\Pi(i) = 0$.

Lenders cannot distinguish between borrowers of different types. Therefore, the competitive equilibrium with adverse selection is defined as an interest factor i_2 such that (a) $E\Pi(i_2) \geq \rho$; (b) There is no interest factor i for which $E\Pi(i) \geq \rho$ and both $U(i,t) > U(i_2,t)$ and $U(i,t) > W$ for any type t . In other words, an interest factor i is an equilibrium interest factor if lenders do not lose money on average at i , and if there is no other interest factor which any type of borrower would prefer at which lenders would avoid losing money.

As long as $\bar{R} - \rho > W$ (the condition for lending to be possible in the case of complete information), then there will be lending in the equilibrium with adverse selection. If $\rho >$

$E\Pi(i^*(1)) \equiv p_1\pi(1)i^*(1) + (1-p_1)\pi(2)i^*(1)$ (as in Figure 1), then the equilibrium interest factor will be $i_2 = \rho/\pi(2) > \hat{i}$ and only the risky type 2 borrowers will demand loans. Thus the safer borrowers, who pay a relatively low interest factor in the complete information equilibrium, and whose projects earn an expected return in excess of the opportunity cost of capital to lenders, are excluded from access to credit because they cannot distinguish themselves from the risky borrowers. If $\rho < E\Pi(i^*(1))$ (as in Figure 2), then the interest factor will be $i_2 = \rho/\{p(1)\pi(1) + [1-p(1)]\pi(2)\}$, which is less than $i^*(1)$ and all potential borrowers will demand loans. It should be clear that \tilde{i} is not an equilibrium. At that interest factor only risky borrowers would demand credit and lenders would make zero profits. But all borrowers prefer i_2 to \tilde{i} and lenders also avoid losing money at i_2 .

Many discussions of the implications of adverse selection for credit markets in less developed countries focus on the possibility of credit rationing. In this simple model credit rationing does not occur. How does this model differ from the celebrated work of Stiglitz and Weiss (1981), which is the theoretical basis of the worry that credit rationing might be pervasive? The essential difference is that current model presumes that lenders have access to an infinitely elastic supply of funds at a cost of ρ . Stiglitz and Weiss show that when the relationship between the expected return to lenders and the interest charged is a non-monotonic function with an interior local maximum (as in our Figures 1 and 2), then there exist supply of fund schedules which lead to a competitive equilibrium with rationing. Figure 3 (a modified version of their Figure 4) illustrates the Stiglitz-Weiss result. The demand for loans is simply $N_1 + N_2$ for $i \leq i^*(1)$, N_2 for $i^*(1) < i \leq i^*(2)$, and 0 for larger i , where N_i is the number of the i th type of borrower. In the lower left quadrant we show the supply of funds to lenders as a function of the cost of those funds, ρ . We have drawn this schedule so that rationing will occur in equilibrium - other supply schedules will lead to equilibria without rationing. The supply of loans schedule in the upper right quadrant is derived by tracing the effect of the interest factor i on the expected return on loans, and hence on the supply of funds to lenders. The competitive equilibrium entails lenders charging $i^*(1)$ and earning an expected return of $E\Pi(i^*(1))$. The demand for loans at $i^*(1)$ exceeds the supply of loanable funds, leading to rationing of credit. An increase in the interest factor would cause type 1 borrowers

to drop out of the market, leaving lenders with a riskier portfolio of loans and reducing expected returns to lending. At interest factor i_e loan supply equals loan demand (with only type 2 borrowers in the market), but lenders earn a lower expected return than at $i^*(1)$ - a lender charging $i^*(1)$ could attract borrowers of all types, and would earn a higher expected return. Even in the absence of governmental interest rate restrictions, therefore, credit rationing is possible in equilibrium.

3. Interactions between External and Internal Lenders

Now suppose that local lenders are well-informed and competitive, but face a relatively high opportunity cost of capital ρ_h . As long as ρ_h is not so high as to exclude lending altogether (that is, we must have $R - \rho_h \geq W$), the complete information equilibrium is as described in section 1, and involves $i_3(1) = \rho_h / \pi(1)$ and $i_3(2) = \rho_h / \pi(2)$. Note that $i_3(1) \leq i^*(1)$ and $i_3(2) \leq i^*(2)$ (that is, the interest factor offered by the competitive local lenders is less than or equal to the maximal interest factor these borrowers would accept, as defined in subsection 2). Now consider the possibility that external, ill-informed lenders will enter this market. As in subsection 2, they cannot distinguish between type 1 and type 2 borrowers, so they must offer the same interest rate to both. If there were no local lenders, both type 1 and type 2 borrowers would demand loans as long as $i < i^*(1)$. However, with local lenders offering $i_3(1)$ to the safer type 1 borrowers, these borrowers drop out of the market for external credit as soon as the interest factor on external loans exceeds $i_3(1)$ ($< i^*(1)$). Suppose that the opportunity cost of capital for the external lenders is ρ_L (less than ρ_h), as shown in figure 4. If there were no local lenders, the equilibrium would involve the external lenders lending to everyone at interest factor \tilde{i} . However, because of the local lenders, type 1 borrowers refuse contracts at that interest factor, and the external lenders can lend only to the riskiest borrowers, charging the much higher i_3 .

There are a number of important implications of the equilibria described in sections 2 and 3 which should be reemphasized. First, when lenders have incomplete information, the terms at which credit is available to a particular borrower depend not only on her own characteristics, but on the characteristics of other potential borrowers in her locality. The problem is that the lender cannot distinguish her from the other potential borrowers, so the

lender ascribes to her their characteristics. A borrower with a particularly safe, high return project may not have access to credit because she cannot convince lenders of her good qualities (after all, *all* potential borrowers are claiming that their projects are particularly safe and high-yielding). Second, the problem of adverse selection can lead to credit rationing even in the absence of government interest rate controls. Third, information barriers can inhibit the integration of credit markets. Lenders with access to relatively cheap funds may not be able to fully penetrate local markets because they cannot distinguish between relatively low- and high-risk potential borrowers. Credit markets, therefore, are segmented by the pattern of the flow of information. All of these considerations apply *a fortiori* to formal sector lenders expanding into new markets, where their access to information is likely to be particularly poor.

Much remains to be learned about the role of imperfect information in African informal financial markets. It would be valuable to document information flows between borrowers and lenders - do the financial transactions actually made suffer from either adverse selection or moral hazard? Perhaps more importantly, is the *pattern* of financial transactions substantially influenced by information availability? The predominance of transactions amongst family and friends might be a reflection of information advantages, or it might be a function of imperfect contract enforcement (see below), or it might be serendipitous. If it is a reflection of information availability, it does not bode well for the expansion of formal financial institutions, which are likely to be at a substantial informational disadvantage. Finally, and crucially, the economics of incomplete information highlights the essential role of institutions and local variation. Small changes in the pattern of information availability can be associated with large changes in the pattern of financial sector activity. For example, the availability of collateral (perhaps because a region is densely populated and can support an active land market) can largely alleviate problems of asymmetric information. Alternatively, an active migratory labor market can compound adverse selection problems. Consequently, patterns of borrowing and lending may be very different in different regions. Generalization is dangerous, so localized research efforts must be encouraged.

B. Imperfect Enforcement and Long-Term Relationships

The preceding section made the assumption that if the borrower *could* pay back, he would. Informal finance is characterized, however, by the lack of formal legal enforcement mechanisms. Why, then, do borrowers repay? This section examines the construction of repayment incentives in the absence of legal sanctions.

Theorists have focused on two potential mechanisms which can serve to provide repayment incentives. The first is the "self-enforcing contract". The idea is that borrowers repay because they fear losing access to future loans if they ever default. In fact, this is the explanation often provided by borrowers when asked why they repay loans. We provide an extremely simple model which illustrates this mechanism. The second is the creation of social sanctions to punish defaulters. This idea is that defaulters are penalized broadly by the community as a whole, in addition to being denied access to future loans. It is clear that general social sanctions play an important role in sustaining some informal credit markets (Udry, 1994). Theorists (esp. Kandori, 1993) have only recently begun to model the process through which the sanctions arise and persist. We hypothesize that successful group lending schemes are connected to the availability of social sanctions which punish defaulters.

To put the problem starkly, consider a farmer who typically has very low income during the pre-harvest period (Y_g) and relatively high income immediately after harvest (Y_h). Without any financial transaction, the farmer's (autarky) utility is $U_A \equiv U(Y_g) + U(Y_h)$.⁴ $U()$ is a conventional concave utility function, so the farmer would like to borrow to smooth consumption. Consider the possibility that the farmer could borrow L , and repay the loan immediately after harvest at interest rate r . If the loan is made and repaid, the farmer's utility is $U_{LR} \equiv U(Y_g + L) + U(Y_h - (1+r)L)$. Because $U()$ is concave, there exists a positive L for which $U_{LR} > U_A$. Let's restrict attention to some particular combination of L and r such that the farmer strictly prefers taking the loan to not taking the loan.

The problem, however, is that the farmer might decide to default, in which case his utility is $U_{LD} \equiv U(Y_g + L) + U(Y_h)$. In fact, this is obviously the best option in the short-run

⁴ To simplify, we assume that the farmer does not discount the future.

for the farmer, because she gets the loan and doesn't have to repay. To complete the description of the game played between the farmer and the lender, suppose that the lender is a profit-maximizer and has access to capital at a zero opportunity cost. If the loan is made and repaid, the lender gets $\Pi_{LR} \equiv rL$. If there is no loan, the lender gets $\Pi_A \equiv 0$, and if the loan is defaulted the lender earns $\Pi_{LD} = -L$. The lender chooses one of two strategies: to lend or not to lend. The borrower chooses either to repay or to default. The normal form of the game is:

Borrower:	Repay	Default
Lender:		
Lend	$U_{LR} \equiv U(Y_g + L) + U(Y_h - (1+r)L)$ $\Pi_{LR} \equiv rL$	$U_{LD} \equiv U(Y_g + L) + U(Y_h)$ $\Pi_{LD} \equiv -L$
Don't Lend	$U_A \equiv U(Y_g) + U(Y_h)$ $\Pi_A \equiv 0$	$U_A \equiv U(Y_g) + U(Y_h)$ $\Pi_A \equiv 0$

No Nash equilibrium of this game involves lending. If the loan is made, the borrower does best by defaulting. Knowing this, the lender refuses to lend. Therefore, there is no credit market, despite the fact that both the borrower and the lender would be better off if the loan was made and repaid than they are in autarky.

How is a credit market to be sustained in these circumstances if there are no external enforcement mechanisms? One answer is in the replies of many survey respondents - they fear being cut off from future access to credit. This brings us naturally to a repetition of this one-period "stage game". Suppose that the lender and borrower interact over an indefinite number of years (to be precise, suppose that the probability that the two will continue to interact next year is δ , and that this probability remains the same forever). It may be possible to sustain a Nash equilibrium with lending in the repeated version of this game⁵.

Consider the following strategies: the lender lends to the borrower, unless the borrower has ever defaulted, in which case the lender never lends again, while the borrower repays the loan, unless the lender has not made a loan, in which case the borrower defaults on any future loan. If δ is large enough, this will be a Nash equilibrium. In order to confirm this assertion, we have to check that both the lender and the borrower are playing their best

⁵ It will actually be a sub-game perfect equilibrium.

response to the other's strategy. For the lender, it is fairly obvious: if the borrower is playing the "repay" strategy, the lender makes a profit by lending. Moreover, if the borrower is playing "default", the lender obviously does best by not lending. For the borrower, we must be more careful. If the lender is playing "lend", is it really best for the borrower to play "repay"?

Compare the expected utility achieved by the borrower if she repays with that she achieves if she defaults, assuming that the lender is playing the strategy: "lend" until a default, and "not lend" forever afterwards. If the borrower defaults, he gets U_{LD} in this period and U_A forever more in the future. If she repays, she gets U_{LR} this period and U_{LR} continually in the future. So the question is, is the gain achieved by the borrower by defaulting this period $(U_{LD}-U_{LR})= U(Y_h)-U(Y_h-(1+r)L)$ less than the future gain in utility that she gets by paying back the loan (which, in each period, is $U_{LR}-U_A$)?⁶ Formally, the borrower will repay if

$$(2) \quad U(Y_h) - U(Y_h-(1+r)L) < \sum_{t=1}^{\infty} \delta^t (U_{LR}-U_A) = \frac{\delta}{(1-\delta)} (U_{LR}-U_A).$$

$U_{LR}-U_A > 0$, so this inequality will be satisfied for δ close enough to one. That is, if the probability of the relationship continuing is high enough (and, implicitly, the borrower's discount rate is low enough), the borrower will repay the loan. Knowing this, the lender will indeed make the loan and a credit market will exist even in the absence of external enforcement mechanisms.

The implications of this way of thinking are rich. Many of the institutional characteristics of informal finance can be understood through the application of models related to this simple example. A central lesson of the model is the importance of penalties. Loan repayment is enforced through exclusion of defaulters from access to future credit transactions. If this penalty is to be effective, the defaulter must not have easy access to

⁶ Recall that we have assumed that L and r are such that the borrower prefers to borrow and repay than to not take the loan, so $U_{LR} > U_A$.

alternative sources of credit. So the lender-borrower relationship must be exclusive.⁷ Increasing the autarky utility of the borrower makes it more difficult to sustain the credit market. It is possible, therefore, that the introduction of new borrowing alternatives (either through the expansion of formal sector lending or the growth of new sources of informal finance) could lead to a collapse of an established credit market, even if the new alternatives are worse.⁸ The constraint (2) also places limits on the size of the loans that can be supported through self-enforcing contracts. As L increases, the short term benefit of defaulting increases faster than the long-run cost of the penalty. Indefinitely large loans cannot be supported. In a sense, then borrowers are "rationed", in that they might desire a larger loan at a given interest rate, but cannot be trusted to repay if in fact they are given such a large loan. It should also be noted that imperfect information makes all of these difficulties worse. Suppose that it is possible that the borrower's project fails and she cannot repay as a result. If the lender cannot distinguish intentional from unintentional default, the penalty must be imposed whenever a default occurs. This complicates the construction of equilibria (see Fudenberg 1993), reduces the size of loans which can be supported, and makes it more likely that the credit market collapses entirely.

External enforcement makes it easier to sustain lending. Suppose that the penalties faced by borrowers are not restricted to exclusion from future access to credit, but can include exclusion from other financial transactions (such as informal insurance) or other economic or social penalties.⁹ Suppose that these additional costs can be summarized by a utility cost of

⁷ Alternatively, if there are many lenders, they could act as a consortium, communicating with each other about the default behavior of their borrowers and jointly excluding defaulters from future loans. The lenders as a group now face the problem of ensuring that they all enforce the penalty on defaulters, even though it would be individually profitable for any one of them to "defect" and make a loan to a borrower who had previously defaulted.

⁸ To see this explicitly, suppose the new loans permit borrowers to achieve a utility of U_N , with $U_N < U_{LR}$. If $U_N > U_A$, then equation (2) may no longer be true if U_A is replaced by U_N . In this case, the informal credit market collapses.

⁹ This is a generalization of the notion of "interlinkage" which is common in the treatment of informal financial institutions, particularly in south Asia (Bell, 1988).

$D > 0$ which borrowers must pay in the event that they default.¹⁰ The borrower's utility in the event that (Lend, Default) is played in the stage game is now $U(Y_g + L) + U(Y_h) - D$, and the left hand side of inequality (2) now has an additional D subtracted. It is now possible to sustain larger loans at lower values of δ than before. So the availability of social sanctions is unambiguously good for the sustenance of a credit market.¹¹ These social sanctions, of course, are available only in reasonably cohesive social groups, hence we find yet another reason for the propensity to transact credit between friends, family, and neighbors. In addition, the fact that social sanctions often are not triggered by default on formal sector loans may contribute to the inability of many formal sector institutions to reach significant proportions of the population.

All of these features of credit contracts in the absence of legal enforcement mechanisms contribute to financial market segmentation. Repayment of loans depends on the ability to impose penalties. If penalties are unavailable to distant lenders, these lenders will not make loans, regardless of the apparent availability of arbitrage opportunities. Large differences in the opportunity cost of capital can persist - how do you arbitrage by lending from relative capital surplus regions or sectors if the loans will not be repaid?

There is much that remains to be learned about the enforcement of credit contracts in Africa. The current state of knowledge is very weak. What is the prevalence of default on informal loans? What are the consequences of a default? Is it true that defaulters are excluded from future access to credit? Are additional social sanctions imposed? How do lenders who have suffered a default at the hands of a borrower prevent that borrower from gaining access to loans from other lenders? What is the scope of informal lending in these circumstances - if any loan transactions do occur across long distances or great social boundaries, how are they enforced? All of these questions are qualitative and can be addressed with minimal econometric technique, but they are essential to an understanding of

¹⁰ Such costs seem to play a critical role in credit transactions in Zaria (Udry, 1994).

¹¹ We are left with a deeper question: how are the social sanctions constructed and maintained? Why do members of the community who were not involved in the loan transaction bother to impose penalties on the defaulter? Kandori(1993) proposes that they do so out of fear of having sanctions imposed in turn on themselves.

the operation of informal financial markets in Africa. Moreover, there is likely to be substantial variation across countries and social groups in the answers to these questions, so much work remains to be done.

C. Saving

It has already been noted that most savings, especially by the relatively poor, are held in the form of real assets. This equilibrium portfolio allocation results both from the poor performance of financial assets and from the strong demand for owning the real assets which are used directly in production. These, in turn, are both consequences (in large part) of information asymmetries.

The poor performance of financial assets is not particularly surprising, because financial "saving" is subject to precisely the same information and enforcement difficulties as "lending". As a result, much of the financial saving which does occur is held within close social groups in order to circumvent the moral hazard and adverse selection problems associated with entrusting assets to strangers. There is scope for some localized financial saving, and we discuss in subsection (1) the theory behind the successful group saving schemes which serve specialized needs and have recently experienced marked growth in some regions. However, localized deposit taking is subject to the same difficulties of covariate risk and seasonal demand for capital as is localized credit (again, Binswanger and Rosenzweig [1986] is an excellent and readable reference). Therefore, there are tight constraints on the returns that can be earned through informal financial savings. Moreover, while households may have the option of holding formal sector financial assets (say, bank accounts), these often have strongly negative real returns, are subject to (sometimes extremely) high transaction costs and are often quite illiquid. Therefore, financial saving (both formal and informal) presents a relatively unattractive alternative to holding real assets.

Secondly, households which operate businesses (farmers as well as non-farm enterprises) typically use capital inputs in the production process. However, asset rental markets are quite imperfect in most of Africa. They are not unknown: the pledging of cocoa trees and livestock tenancy are well-documented examples. However, these rental markets are

thin, localized and imperfect. Information asymmetries once again are the primary theoretical explanation. For example, owners of livestock are loathe to rent them to other farmers because of the moral hazard associated with use of an animal by someone who does not own it. As a result, the assets used in production by a household generally must be owned by that household and therefore form an important component of the household's portfolio. In subsection (2), we discuss that substantial component of households' portfolios comprised of assets often called "unproductive", primarily stocks of output. For both "demand" and "supply" reasons, therefore, financial savings are a relatively unimportant component of the portfolios of most Africans.

1. Group Saving

Group saving schemes of one sort or another are known to operate in about half of all African countries (Aryeetey 1994). Common to virtually all these schemes is the fact that the groups tend to be socially homogeneous. It is clear that this feature is a means of avoiding the information and enforcement difficulties that have formed the theme of this paper. At the same time, it is possible that these groups help *build* what Besley and Coate call "social collateral" by increasing information flows, providing benefits (which could be cut off) to members, and serving as a focal point for social interaction. Informal group saving, therefore, in addition to its direct role in mobilizing savings, may serve to ameliorate the information and enforcement difficulties associated with other financial transactions.

The two broad categories of group saving institutions (rotating and non-rotating) seem to serve different direct economic purposes. Rotating saving associations provide a means of accumulating savings for the purchase of indivisible goods more quickly than can be done in autarky (Besley, Coate, Louny [1993]). The intuition of this is simple. Suppose it costs X to open a business. By saving 1 each week, it will take an individual X weeks to accumulate enough capital to open the business. If X individuals get together to form a rotating saving association, one group member will be able to start the business in week 1, a second in week 2, and so on. Only the last group member to receive the fund will have to wait the entire X weeks before starting her business.

Non-rotating saving associations (exemplified by *susu* collectors in Ghana) serve a

different purpose, because savings are accumulated in the fund rather than distributed with each collection. These groups provide the obvious benefits of reducing saving transaction costs and providing for inexpensive safekeeping of savings. In addition, however, a key property of non-rotating saving associations is the availability of a fund of savings which can be disbursed as loans to members in the case of emergencies. These saving groups, therefore, play a role in providing insurance against the idiosyncratic risks faced by members of the group.

2. Asset Stocks

When insurance and credit markets are incomplete, asset stocks assume a special role by permitting households to insulate consumption from income fluctuations. Households use their assets as buffer stocks, dissaving when confronted with adverse shocks to their incomes. Stocks of output and other so-called "unproductive" assets play a special role in this buffering process. We should note here that holding output stocks is in fact a production process - the household is physically transforming the good (by moving it through time) in much the same way as a trader produces by transporting products. There is a return to be earned by holding stocks of output generated by the seasonal rise in prices.¹² With simple technologies (most output, particularly grain output, is stored in small quantities by farmers or merchants rather than in central elevators), this return is linear - it does not diminish with the quantity of output stored. If the return to other real assets (those used directly in production) is subject to diminishing returns, then holdings of these assets are determined by production optimality. Consumption smoothing in response to income shocks should be effected exclusively through variations in the holdings of output (Udry, 1995).

A simple modification to the standard intertemporal choice model will make this argument obvious. Suppose that income depends on the household's holding of a particular asset (say, livestock) A_{kt} :

$$(3) \quad y_t = H(A_{kt}) + F_t$$

¹² Which in turn is determined by the cost of storage (inclusive of storage losses) and the opportunity cost of capital. There is little evidence that super-normal profits are made by those who store grain, although this may occur in extreme circumstances (see Ravallion [1987]).

where herding income from the stock of animals $H()$ is an increasing and strictly concave function and F_t is another (random) source of farm profits. If we assume that the household maximizes a separable von-Neumann Morgenstern utility function (with discount rate β) over the remainder of its life, it will choose $A_{\kappa t}$ so that

$$(4) \quad u'(c_t) = \beta E_t (1 + H'(A_{\kappa t})) u'(c_{t+1}).$$

If the household can also hold an asset (say, grain) which earns a certain return of r_{it} , then

$$(5) \quad u'(c_t) = \beta E_t u'(c_{t+1}) (1 + r_{it}), \text{ so}$$

$$(6) \quad H'(A_{\kappa t}) = r_{it}$$

if $H'(A_{\kappa t})$ is not random. Holdings of asset κ are determined by considerations of technical efficiency and will not be used to smooth consumption in the face of random income. More reasonably, if $H'()$ is random, then if life is long enough that transitory shocks to income do not (substantially) effect expected lifetime income, then (6) (approximately) holds in expectation and holdings of asset κ are unaffected by transitory production shocks as long as the household has positive holdings of the other asset. A series of adverse shocks (perhaps a prolonged drought) might drive these holdings down, necessitating the use of livestock to smooth further shocks.

These microeconomic considerations have important implications for aggregate saving and consumption behavior (see Deaton, 1993). With the substantial majority of saving being directed towards real rather than financial assets, and with those financial assets mostly being held in informal rather than formal arrangements, the relationship between the formal sector interest rate and consumption/saving behavior is substantially attenuated. Saving/consumption decisions will rest largely on the level and variance of income, on the availability and characteristics of (mostly informal) credit and insurance markets, and on changes in production (and therefore factor demand) patterns.

3. INFORMAL FINANCE IN PRACTICE

We define "informal finance" in Africa to embrace all financial transactions that take place beyond the functional scope of various countries' banking and other financial sector regulations. This definition permits the inclusion of a wide range of financial activity whose operational scope may differ across countries. Indeed, various studies suggest a wide variety of such informal savings and lending units in the region (Aredo, 1993; Chipeta and Mkandawire, 1991; Aryeetey and Hyuha, 1992).

In this review of informal finance in Africa, we first describe briefly in this section¹³ some of the informal units operating in sub-Saharan Africa and then proceed to analyze their structural and operational characteristics, concentrating on the nature of deposits and credit available in many countries and how these have been packaged to suit the demand of specific clientele. We consider also the processes for administering such financial services and how they affect the cost structures of institutions. We are quite interested in the extent to which these characteristics and structures can be understood through the application of theoretical models akin to those presented in section two.

Typology of Informal Financial Units

There are generally 3 types of informal units to be found in Africa. These are,

- (1) savings mobilization units that do little or no lending;
- (2) lending units that seldom engage in savings mobilization;
- (3) units that combine deposit mobilization with some amount of lending, albeit to members of distinct associations or groups mainly.

Institutions that take in deposits and lend at the same time appear to be relatively new and have not been known in many countries for more than 50 years. They respond to the need for some form of direct financial intermediation, which was previously absent from informal

¹³ We rely here to a large extent on material from a number of country case studies involving Ghana, Nigeria, Malawi and Tanzania. These form part of the project "Financial Integration and Development in sub-Saharan Africa" which is being administered by the Overseas Development Institute, London, and funded by the World Bank Research Committee. See Nissanke and Aryeetey (1995)

financial activity. Most of them fall under what Seibel (1989) has described as 'self-help organizations'.

Our definition of informal finance in Africa pulls in such schemes as the operations of the Savings and Credit Associations (SCA), known all over Africa; professional moneylenders; part-time moneylenders such as estate owners, traders, grain millers, smallholder farmers, employers, relations and friends; mobile bankers generally known as *susu* or *esusu* collectors¹⁴ in West Africa; credit unions; co-operative societies; etc. These have been observed in both urban and rural areas. While savings collectors fall under the first category of deposit mobilizers, moneylenders, including relations and friends, do not generally accept deposits and may be placed in the second category. SCAs, credit unions/credit cooperatives take in deposits and also lend in rather varied forms.

Informal units observed in Ghana, for example, include moneylenders, *Savings and Credit Associations (SCA)* or *susu* groups, savings and credit cooperatives (SCC), *susu collectors*, mutual assistance groups, landlords, neighbours, friends, family members, etc. (Aryeetey, 1994). While important as lenders collectively, landlords, neighbours, friends and relations seldom lend large amounts on an individual basis. Interestingly, however, most surveys of enterprise finance in Africa often indicate that start-ups of microbusinesses in most African countries are primarily funded by such sources (RPED, 1993). Moneylenders have been known to be significant commercial lenders, often lending from surplus incomes earned from farming or trading. Other informal units usually take the form of groups or associations that take deposits from members and provide varying forms of financial services to those members and sometimes to others. Their services are intended to smooth the consumption of members over short periods of time. An example might be the case of SCA members using accumulated funds to purchase such household items as refrigerators, an item they could not afford within the short-run from own sources.

Rotating savings and credit associations (ROSCAs or *Tontines*) in Senegal normally

¹⁴ This involves a collector (usually male) who visits shops, workplaces, market stalls and homes at agreed times on each day and collects funds towards a savings plan. Following this plan, a saver agrees to deposit a specific amount determined by himself/herself in consultation with the collector for an agreed period of time--usually a month-- after which period, his/her deposits are returned less a day's deposit.

operate among salaried employees (people with fairly regular incomes, such as teachers, doctors and other public employees) as well as market women. As a result, *tontines* are more common in towns than in villages. Savings are allocated to investment as well as to consumption (religious feasts, pilgrimage, etc.), and to idle balances or "unproductive assets" (such as cash, jewellery and commodity inventories) (USAID, 1989).

In Ethiopia, Mauri (1987) and Aredo (1993) have observed a number of informal organizations. The most important of these are the mutual assistance associations called *Iddir* and the ROSCA-type units called *Iqqub*. Many groups come together in order to provide wide ranging mutual assistance, but in the end these are dominated by the provision of financial services to members. This point also holds for many other group-based schemes in sub-Saharan Africa. Indeed, many groups that fall under the third typology of informal financial units have been created by members to primarily encourage mutual assistance, not necessarily financial, to those members. The *Iddir* in Ethiopia embraces family or ethnic groups that seek to support each other in times of personal or household crises. They are designed to perform an insurance function mainly.

The variation in the types of informal financial units derives from the fact that such units are purpose-oriented. Thus, depending on the socio-economic goals of communities, institutions are developed to meet the demand for specific financial services. They respond to the demand of a distinct clientele defined by themselves, using various geographical and/or socio-economic criteria. So long as there exist significant variation in the goals of different social groups and communities within countries, so also will different units emerge. While institution names and size may differ, informal financial units always operate on the common principle of stepping into a particular niche in the market whenever possible. Also, while the different units may have varied reasons for selecting a particular segment of the market for their operations, fundamental practices in the administration of credit tend to be quite similar. This recognition allows for uniformity in our analysis of informal finance across the region. Analyses of dynamism in informal finance show that as these goals change with time, the units are forced to change their operational structures, leading to the observation of so-called "new institutions" (Aryeetey, 1994).

A number of studies on informal finance in Africa suggest that the activity thrives under both repressive and liberal financial sector policies (Aryeetey, 1994; Bagachwa, 1994, Chipeta and Mkandawire, 1994; Soyibo, 1994). Their performance in many countries indicates that they will do well so long as the level of economic activity within the economy calls for increasing financial services from groups that cannot be reached by existing financial institutions. Whenever a demand for short-term credit, particularly among traders, farmers and consumers emerge, and informal unit is likely to emerge also to meet that demand. Our consideration of some characteristics and trends in the operations of informal units below will show this.

Informal Deposit Mobilization and Some Trends

The predominant form of saving in Africa, as in many developing countries, is saving in real assets (See Table 1). Much of this is comprised of assets which have been called "unproductive" - primarily stocks of agricultural output. The financial saving which occurs is mainly concentrated in fairly close social circles, but there is a great variety of different institutional forms within which it is conducted.

Table 1
The Structure of Rural Savings in Ghana (%)

Total Savings	Real Savings	Value of Stored Product	Total Financial Savings	Savings Kept in Banks	Informal Savings
(1)	(2)	(3)	(4)	(5)	(6)
Overall					
100	80.7	42.5	19.1	7.3	11.8
Northern Region					
100	91.8	89.6	8.2	1.2	7.0
Ashanti Brong Ahafo, Eastern and Volta Regions					
100	76.4	23.5	23.6	9.8	13.8

Source: IPC, 1988.

Note: (1) = (2) + (4); (4) = (5) + (6)

The deposits mobilized by various units are targeted for specific purposes by their depositors over relatively short periods. This naturally makes financial intermediation rather difficult. As earlier suggested, the deposit mobilization efforts of informal units have not been impeded by financial sector reforms in many countries. We regard this as a pointer to the fact that informal units operate in market niches that only they can reach.

Individual savings collectors are more commonly observed in West Africa, in such countries as Nigeria, Benin, Togo and Ghana. In both Nigeria and Ghana they have been observed to be the most significant informal savings mobilizers in terms of the numbers of depositors involved and also sizes of deposits (Soyibo, 1994; Aryeetey, 1994). The two researches provide evidence that deposit mobilization by *susu/esusu collectors* in both countries has grown steadily over many years, including the years after formal financial systems were liberalized. Between 1990 and 1992 *susu* collectors in Ghana increased significantly the sizes of their clientele, and the growth in clientele was more rapid in urban areas than in rural areas. In Accra the mean number of depositors in a month per collector rose from 155 in 1990 to 221 in 1991 and 290 in 1992, a total increase of 48% over the period (Aryeetey, 1994). Soyibo (1994) reports that in Nigeria the average number of clients per *esusu collector* rose from an average of 250 in 1991 to 438 in 1993, an increase of 75%. As the numbers of depositors grew, so did average deposit sizes in both cases.

In the case of Savings and Credit Associations (SCA) we note that the deposit mobilization capability of each SCA is dependent on membership size, their incomes and the frequency with which deposits are made into the common pool. While these vary extensively within countries, making it difficult to generalize on trends in deposits, there is indication from the above-mentioned studies that deposits have grown in real terms even under liberal financial regimes. However, limitations imposed on group size in order to contain risk and to preserve the socio-economic values of group members can constrain growth in total deposits. In Tanzania, the total volume of deposits mobilized by SCAs increased by 57% in real terms in the period 1990-92 with significant growth in the numbers of depositors (Bagachwa, 1994). In Ghana, over the three-year period 1990-92, Aryeetey (1994) observed relative stability in the mean amount of deposits collected monthly by *susu* groups as monthly contributions by

members averaged US\$10, which was equivalent to 10% of the monthly salaries of junior employees of public departments. The mean SCA deposit sizes in Zambia, Tanzania and Kenya, lying between 5-10% of incomes, are comparable to those in Ghana. The fact that SCA deposits have often been more stable than bank deposits after financial sector reforms may be related to the fact that the deposits are targeted at some specific item purchase.

Cooperatives and credit unions are probably the commonest non-indigenous informal financial units to be found in many sub-Saharan African communities. In Tanzania, Bagachwa (1994) has noted that the cooperative movement or "scheme" was the most significant informal deposit mobilizer in rural areas. The country had 485 urban-based savings and credit societies (SCS) or credit unions and 438 rural-based cooperatives. They mobilized altogether about TSh 828.4 million worth of deposits at the end of 1990 which was equivalent to 4% of total commercial bank deposits. As with other informal units, credit unions and cooperatives have experienced some growth in membership and average deposit sizes under liberal regimes for many countries.

Informal Lending and Some of its Characteristics

In the periods that various countries have tried to liberalize their financial sectors, credit flow from informal units do not appear to have shrunk, as would have been expected if informal finance was driven mainly by repressive financial sector policies. In Malawi, Chipeta and Mkandawire (1994) have indicated that the mean number of people receiving loans from a moneylender rose from 44 in 1990 to 70 in 1992. Similar increases were recorded for loans coming from traders and estate owners in Malawi. Also, in both Ghana and Nigeria, steady growth in the flow of loan applications to informal lenders have been observed, and these have been matched by steady increases in the numbers of loans granted by various informal lenders (Aryeetey, 1994; Soyibo, 1994).

A major characteristic of informal lending in Africa is that, whereas credit from an individual lender to any set of borrowers may vary in terms of what credit package each borrower actually receives, the more significant variation is in terms of what package different types of lenders are able to put on the market. Thus, while we agree with Adams (1992) that

"informal finance is able to tailor contracts to fit the individual dimensions, requirements, and tastes of a wide spectrum of lenders and borrowers", we also note that this is limited to contracts from different types of lenders mainly. Data from mentioned African studies give us no reason to believe that a single lender grants several different credit packages to different borrowers. The differences in loan characteristics often represent the different lender types and the placement of different borrowers into distinct categories. We will show the variation in selected aspects of loans by type of lender here.

a. Interest Rates

While informal lenders are often perceived to have "outrageously high" interest rates, in contrast with formal lenders, there appears to be considerable variation in the rates of different informal lenders in many countries. We note that most informal lenders grant loans with maturities that lie anywhere between 1-12 months, but with 3-6 month loans dominating. For purposes of comparing interest rates we may use monthly rates for different lenders. Aryeetey (1994) noted from an analysis of variance in the monthly rates of Ghanaian informal lenders that the main source of variation was the type of lender. Also, an analysis of the mean monthly interest rates by type of lender indicated that all other mean interest rates differed significantly from those of moneylenders. On the other hand, when other informal lenders made out loans to persons other than their traditional clientele, (who may be found in distinct groups), their lending rates were no different from those of moneylenders.

Table 2
Mean Monthly Interest Rates of Informal Lenders in Ghana (%) 1992

Region	Moneylender		Susu Collector		SCC/SCA		Credit Union	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Greater Accra	8	7	3.3	3.3	5	5	6	5
Eastern	10	10	3.3	3.3	5	5	10	10
Volta	10	8	3.3	3.3	5	3	5	5
Central	10	7	3.3	3.3	5	3	3	3
Ashanti	9	9	3.3	3.3	3	3	3	5
Brong Ahafo	10	7	3.3	3.3	5	10	10	5
Upper West	--	--	3.3	3.3	5	10	3	3

Source: Aryeetey, E. (1994).

We would normally expect that if informal lenders attached different risks to different borrower categories, a possible way of doing this would be to apply differential interest rates. This has been found not to be the case in many cases (Aryeetey, 1994, Chipeta, 1994). In Ghana, Aryeetey (1994) has observed that interest rates charged by moneylenders really did not vary much. For a three month loan in 1992, an interest rate of 25-30% for the period was usual in urban areas. Rural interest rates were usually not much different from urban rates. Annualizing such rates is often not realistic since annual loans are seldom considered and the rate determination process differs when annual loans are being made. In the cases that repayment went beyond six months to one year, higher interest rates ranging between 50% and 100% of the principal for the period become observable. These rates were not much different from rates observed elsewhere in Africa. Some lenders have been observed to have interest rates that go beyond 100% for one-year loans (Chipeta and Mkandawire, 1994).

It is obvious that there is not a clear pattern to informal interest rates determination. Many moneylenders in Ghana have suggested that the interest rate is the outcome of factors related to both tradition and market forces. While they indicate that, "rates have always been 100% for one year", they also suggest at the same time that "we are aware that our clients

today cannot afford to pay 100% in one year, so we 'help' them out with a lower rate" (Aryeetey, 1994). Our analysis in Section 3 will show how the issue of adverse selection, is played out in the rate determination process.

b. Collateral

On collateral, it may be noted that, while the need to secure loans granted among moneylenders and credit unions may be common practice, it is often not the case for other informal lenders. Thus, while 83% of Ghanaian moneylenders and 76% of credit unions require security against loans, among the community or group based institutions, (such as the cooperatives and SCAs), security is taken for granted, in view of the nature of association. Similarly savings collectors would require security only when they lend to non-deposit clients. Even those lenders who require collateral are reluctant to foreclose in the event of loan nonpayment. Less than 4% of Ghanaian lenders suggested that their first course of action upon a default would be to seize collateral. Instead, the collateral remains in the hands of the lender as the loan is renegotiated (Nissanke and Aryeetey, 1995).

The Development of Niche Markets

It is evident from the foregoing that credit from each segment of informal finance has been packaged to satisfy demand from specific groups. While loans from moneylenders may be more expensive than other informal loans, they are the only informal credit source open to the general public. They do not usually require that borrowers satisfy specific social obligations, such as membership of a group. Hence, the observed higher interest rate represents partly a risk premium for the lender giving up a sanctioning authority that is inherent in other informal arrangements that involve membership of a group. Moneylending is also "unique in the sense that, apart from ROSCAs, it is the only source from which borrowers are assured of a high probability of having their loan requests met. This makes borrowing from moneylenders more acceptable to borrowers without many other options, such as those requiring loans to meet social and economic emergencies. They are not often not attractive for those seeking working capital and fixed investment loans" (Aryeetey, 1994).

The market niche that is served by savings collectors is dominated by low income earners who are interested in very short-term working capital. While the low interest rate is attractive, the possibility of repayment being done through small amounts daily is the main attraction here. Even though the loan amounts are relatively small, receiving them regularly ensures a smoothing of expenditures for many traders in West Africa, who have to make immediate payments to their suppliers to ensure regular supplies. On the other hand, however, the small sizes of loans and the very short maturity periods do not make them very useful for small- and microentrepreneurs.

Even though Savings and Credit Cooperatives (SCC) and Savings and Credit Associations (SCA) offer larger loan amounts at comparable rates than savings collectors, only very limited numbers of borrowers may have access to these at any time in view of the condition of membership. Membership is, however, crucial for screening loan applications and for ensuring that contracts can be enforced. While restrictions on group size are to ensure effective management, they constrain the numbers of people that may have access to loans from the group and also loan sizes. Their loans are therefore attractive for those borrowers whose demand for loans is not regular, such as those requiring loans to purchase a relatively expensive consumption item..

The operations of urban credit unions are quite similar to those of cooperatives and SCAs. The unions have better defined articles of association and formalized channels of administration and management, however. Their target clientele is usually low-income public servants in urban areas. In most countries, therefore, there does not appear to be any major informal units that serve the demand from small- and microentrepreneurs.

Why do Loans from Informal Units Differ or Why is the Market Segmented?

The process of matching informal units with distinct market niches is explained by Hoff and Stiglitz (1993) with the ability of the lender to screen particular borrowers and enforce particular kinds of contracts. "Only an individual who markets his surplus through a trader can be matched with that trader-lender" (Hoff and Stiglitz, 1993, pp6). Lenders select those borrowers that lead to minimal transaction costs, defined broadly. These costs may be

broken down to the cost of administering the loan and the default risk cost. The transaction costs associated with a particular loan seem to depend strongly on the flow of information between the lender and the potential borrower, and availability to the lender of a means of penalizing the borrower in the event of a default.

i. Loan Screening Practices

We must emphasize that a distinguishing feature of informal finance in Africa is that informal lenders generally attach more importance to loan screening - the selection of applicants - than to monitoring the loan as it is used. In the community- or group-based arrangements, standard screening practices are based on groups' observations of individuals' habits and groups' obligations towards applicants. Thus in SCAs and cooperatives, the groups are aware that members have joined principally because of the possibility of borrowing, which makes them obliged to meet that need. In "screening" applicants therefore, the emphasis is not necessarily on whether members can pay back loans they have taken, but on the commitment of members to the group's goals. The group must also decide whether it has effective disciplinary measures that could be exercised if problems arose. Most of their screening, therefore, has to be done before members join up. Hence, groups do not screen loans. They actually screen membership which amounts to determining whether a person can be trusted to regularly meet his obligations to the group. Since they invariably have similar incomes and similar credit requirements, the major criterion in answering the question is the individual's character and how reliable he/she is. The concern with adverse selection by SCAs is quite obvious.

Screening by individual lenders relies extensively on personal knowledge of the borrower - either directly or through an introduction by an old client. In Tanzania, 86% and 63% of urban and rural informal lenders respectively reported that they always knew personally their borrowers (Nissanke and Aryeetey 1995). In contrast to Eastern and Southern Africa, where most informal lending is based on extensive personal ties, there is more diversity in the relationships between borrowers and lenders in West Africa. Most moneylenders studied by Aryeetey (1994) in Ghana did not know their clients before they

applied for loans; similarly in Nigeria only one quarter of moneylenders knew their clients before the application (Nissanke and Aryeetey 1995). In each case, however, the moneylenders relied on recommendations from old clients. This obviously contrasts with the situation among savings collectors. Moneylenders often ask others about their loan applicants, and when they do, the most important issues for many of them are the character of the applicant and the wealth position of the applicant. They seemed to usually find the information they sought in most cases before loans were granted.

Only a third of moneylenders studied by Aryeetey (1994) in Ghana indicated any clear credit-worthiness criteria. They were equally divided on the importance of direct project returns to borrowers and "need" for credit by the applicant as the most criteria in determining whether an applicant should be lent money or not. Many moneylenders often arrange interviews with applicants during which they try to find out more about their backgrounds and intended use of loans. The issue of "credit need" here is quite distinct from the usual concept of "credit demand" as what is at stake is mainly the urgency attached to the application for credit as against feasibility. It is presumed that if the "need" was urgent the "demand for credit" would be high, as for example the demand from a household wanting to finance a funeral. In most cases, so long as some form of security was available, moneylenders would lend if they have the means to do so.

ii. Monitoring, Default and Contract Enforcement

There is little evidence of any substantial attempt by African informal lenders to monitor the use of loans by their clients. Half of credit unions in Ghana never monitored any loans, and another 22% only sometimes did. In Tanzania, only 2 of 10 ROSCAs, 2 of 22 trader-lenders, 3 of 8 landlord-lenders, and 2 of 19 SCSs reported any form of loan monitoring. In Nigeria, none of the moneylenders indicated that they monitor loans. In Malawi, moneylenders and traders show no attempt to monitor loans, but all of the estate owners indicated that they monitor the use of any loans that they advance. This last class of loans involves interlinked lending and marketing activities which may require regular attention by the estate owners (Nissanke and Aryeetey, 1995). Most informal loans in Africa are used for working capital or consumption; there seems little purpose in monitoring their use.

The success of informal lenders in achieving high repayment rates cannot be attributed to intensive monitoring activities. Indeed delinquency in loan repayment is relatively low, i.e. in contrast with banks. Thus, for example, 77% of the sample of different informal lenders studied by Aryeetey (1994) in Ghana had no delinquent borrowers in 1990 and 70% had none in 1991. For those who had delinquent borrowers, they usually were less than 5% of total borrowers. Lenders generally believed that delinquent borrowers would usually pay up within 3-6 months after agreed period. Malawian and Tanzanian figures also suggest low default rates. Default rates are higher in Nigeria (17% from SCAs and 20% from esusu collectors), but these are lower in rural Nigeria (Nissanke and Aryeetey, 1995; Udry 1990).

Even though loan administration practices suggest that lenders tend to be concerned with adverse selection, some of their revealed perceptions during interviews indicate that they cannot be aloof to the dangers of both strategic default and moral hazard. They are often divided on reasons for default or delinquency in repayment. While screening practices indicate a concern about the possibility of a "strategic default" in which the borrower simply decides not to pay back, rather than the possibility of default because of the failure of the project associated with the loan, in rural areas, they often attribute non-payment to borrowers' cash flow problems while urban lenders think it is a mixture of cash flow problems and low commitment on the part of borrowers to settle debts. They are, however, aware that after receiving loans, the borrower might not use it for the intended purpose. Knowing this does not raise much concern among them in many cases as they believe they are adequately covered by whatever arrangements they have made to secure loans, be they collateral or group pressure. After cross-tabulating perceptions on the causes of default to loan end-use, Aryeetey (1994) concluded that lenders that provided loans for mainly consumption purposes and trading tended to be more concerned with strategic default whereas those lending to farmers, in particular, showed more concern about failed projects leading to default.

There are interesting ways of reacting to delinquency and default. In most situations, lenders simply go to the homes and businesses of their clients to deliver verbal warnings. They are often divided among those who would do nothing but hope the lender pays and those who would threaten to cause harm to the body of the borrower or his property. While

moneylenders will invariably mention the confiscation of collateral, groups are more likely to dismiss borrower from their midst. It would appear that group or community-based institutions have no effective means of dealing with defaulters except to make them "live with the stigma" of being known to be defaulters. On the other hand, when the number of defaulters in a rural cooperative arrangement is large, the sanction of stigmatizing an individual fails to be effective. Very rarely does a cause of default go to court. Lenders are often reluctant to seek legal assistance when the need arises, and this is explained by the fact that quite a number of them believe it can be very costly.

Transaction Costs and Segmentation of Informal Markets

In the afore-mentioned studies, variations in the administrative costs of screening, monitoring and contract enforcement were found to be associated with the type of lender. In Ghana, the administrative costs of credit unions in urban areas were significantly larger than those of other informal units, while the lowest costs were incurred by the indigenous group-based units, i.e. the SCAs. (See Table 3). Similarly, the administrative costs of SCAs were significantly smaller than all others. Some correlation has been established between the degree of organization involved in the activity and the administrative costs incurred in lending.

Table 3
Mean Loan Administration Cost in Ghana (% of Loan Amount, 1992)

Region	Moneylender		Susu Collector		SCC		Credit Union	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Greater Accra	0.9	1.1	1.0	0.6	0.1	0.1	1.7	4.6
Eastern	1.2	2.5	2.5	2.3	0.1	0.2	7.1	10.0
Volta	1.5	3.1	2.7	2.5	0.1	0.2	4.6	4.6
Central	1.7	4.6	2.7	2.4	0.1	0.1	1.5	2.6
Ashanti	1.3	1.6	2.2	2.0	0.1	0.1	4.2	8.0
Brong Ahafo	1.4	2.5	2.4	2.4	0.2	0.3	4.2	2.2
Upper West	--	--	2.5	2.6	0.1	0.2	0.5	2.3

Source: Aryeetey, E. (1994).

While informal units tend to have different transaction costs, these do not come from different screening, monitoring and contract enforcement practices. They are to be found in the kind of 'infrastructure' used by the units, with the major sources of variation being the personnel costs and extent of record-keeping and stationery applied. Obviously, the less formal the activity, the lower the transaction costs. They all attach greater importance to screening, which invariably involves addressing the issue of "can lender trust borrower to repay?" In marginal cases, the issue becomes "what sanctioning authority the lender possesses".

The segmentation that is observed arises because in attempting to answer these questions and thereby reduce the information asymmetries involved in lending, informal units have to create distinct groups or associations that they can control, one way or another. This attempt at creating controllable associations precludes the participation of some potential borrowers, whose only recourse is to the moneylender. Those going to the moneylender may be therefore be seen as the 'least creditworthy' and therefore the highest-risk borrowers. Subsequently, even though moneylenders may have lower transaction costs than credit unions, their interest rates are higher, as they are determined to cover the higher risks perceived.

Summary of Empirical Findings

Thus virtually all studies of informal finance in both rural and urban Africa is that a substantial majority of lending occurs between friends, family and neighbors. The fact that financial transactions occur predominantly within a small social circle is surprising and is indicative of financial market imperfections. On its face, this finding is surprising. In the absence of market imperfections, there is much to be gained from extending financial networks over large distances (both geographically and socially). When agriculture (particularly rainfed agriculture) forms an important component of an economy, capital utilization is highly seasonal. The seasonality, however, varies across regions, so long-distance credit transactions can contribute to ameliorating seasonal capital constraints. Furthermore, in the absence of complete insurance markets, borrowing and lending act as

important insurance substitutes.¹⁵ However, risks tend to be highly covariate over small regions (everyone in the village, for example, might be subject to the same local drought), so long-distance financial transactions can more effectively serve to smooth the effects of risk (Binswanger and Rosenzweig, 1986). Alternatively, transactions across social barriers, say between farmers and office workers, can serve to mitigate the adverse effects of seasonality and covariate risk.

The general finding that financial transactions occur predominately between family, friends and neighbors, therefore, is *prima facie* evidence of market imperfections. In the absence of substantial effective government intervention in informal finance, information asymmetries and imperfect contract enforcement are prime candidates for investigation as the source of these imperfections.

There is evidence that commercial lenders expend more resources on screening new applicants for loans than they do on monitoring the activities of current borrowers. This suggests (but certainly doesn't prove) that adverse selection is more of a concern than moral hazard. Credit transactions undoubtedly embody elements of both adverse selection and moral hazard, nevertheless, the primary lessons of the effects of information asymmetries on the structure of informal credit markets and the potential interactions between formal and informal finance can be accommodated in a model limited to adverse selection.

The primary preoccupation of lenders, of course, is the question "Will I be repaid?" The corresponding concern of borrowers is their own reputations. Commercial lenders expend substantial resources investigating the "character" of potential borrowers: they communicate with each other about the repayment history of borrowers, and they claim in surveys that they seek out borrowers with a "commitment" to repay. However, many lenders and borrowers show little concern for maintaining repeated relationships, suggesting that penalties for default are more generalized than the simple denial of future access to credit. This constellation of empirical regularities suggests that we should be concerned with the social mechanisms that people have developed to enforce contracts in the absence of formal

¹⁵ Households borrow when faced with an adverse shock, and repay later when times are better.

legal sanctions.

4. CONCLUDING THOUGHTS

This paper has attempted to bring together the well-established literature within development economics on the theory of credit and savings transactions under conditions of incomplete information and imperfect external enforcement with a newer, but rapidly growing empirical literature on informal finance in Africa. We have tried to make the argument that there is a reasonably firm (though certainly incomplete) theoretical foundation for thinking about financial markets in Africa, and that there is a growing body of knowledge concerning the institutional arrangements through which financial transactions are effected in Africa. We have argued that this state of affairs is fertile for generating new research, and have described a variety of researchable topics. We conclude by summarizing our thoughts regarding the most pressing themes for new research.

1. There are theoretical reasons for expecting that the institutional arrangements surrounding financial transactions might display considerable variation across regions and social groups depending upon information flows, the availability of external enforcement mechanisms, the market environment (such as the availability of insurance or insurance substitutes) and the characteristics of production (particularly seasonality, risk and the characteristics of the capital goods used in production). The available empirical evidence confirms the diversity of arrangements. This implies that premature generalization with respect to the characteristics of informal financial activity can be misleading, and that there is an important role for localized research.

2. The existing literature provides a foundation for research which begins the difficult task of empirically modelling informal financial markets in Africa. Given an adequate institutional knowledge of a particular financial institution or set of institutions (generated through research as suggested in the previous paragraph), the well-developed tools of information economics and repeated game theory can be used to pose well-formulated empirical questions. For example, there is no work to date which formally examines the determination of contractual terms (interest rates, loan sizes) in African credit markets

characterized by adverse selection. What characteristics of borrowers are observed by lenders? How do these characteristics affect the terms at which credit is available? To what extent do informal lenders have access to formal sector funds, and how do changes in the formal sector interest rate affect the terms of informal finance? The tools exist to begin to address these issues - what is required is data collection and analysis guided by both knowledge of local institutions and familiarity with the appropriate theoretical models.

3. A substantial basis of theoretical knowledge exists, but new theory can be inspired by the outcome of research into local institutions. For example, we know of no compelling theoretical model which provides a coherent explanation of the institutional arrangements surrounding *susu* collectors in Ghana.

4. Finally, there is an important opportunity for new research which integrates emerging knowledge regarding informal finance into macroeconomic models. Given (a) the demonstrated quantitative importance of informal sector borrowing, and (b) the fact that most investment occurs in non-financial assets, it is essential to begin to build models which can account for the interconnections between key macroeconomic policy variables (formal sector interest rates and banking regulations, in particular) and the terms of informal finance. It is a humbling fact that these connections currently are poorly understood, and yet they provide the key link between macroeconomic policy and aggregate saving and investment.

References:

- Adams, D. 1971. "Agricultural Credit in Latin America: A Critical Review of External Funding Policy." American Journal of Agricultural Economics, 53.
- Adams, D. W. (1992); Using Contracts to Analyze Informal Finance, Economics and Sociology Occasional Paper No. 1972, Rural Finance Program, Ohio State University, Ohio.
- Adams, D., D. Graham, and J.D. Von Pischke, eds. 1984. Undermining Rural Development with Cheap Credit. (Boulder: Westview).
- Alderman, Harold and Christina Paxson. 1992. "Do the Poor Insure?: A Synthesis of the Literature on Risk Sharing Institutions in Developing Countries." Manuscript, World Bank.
- Aredo, D. (1993); The Informal and Semi-formal Financial Sectors in Ethiopia: A Study of the Iqqub, Iddir and Savings and Credit Co-operatives, AERC Research Paper 21.
- Aryeetey, E. (1994); Financial Integration and Development in Sub-Saharan Africa: A Study of Informal Finance in Ghana, Mimeo. (Processed), Overseas Development Institute, London.
- Aryeetey, E. and M. Hyuha (1991); The Informal Financial Sector and Markets in Africa: An Empirical Study, Economic Reform in Sub-Saharan Africa, ed. by A. Chhibber and S. Fischer, A World Bank Symposium, Washington D.C.
- Bagachwa, M.S.D. (1994); Financial Integration and Development in Sub-Saharan Africa: A Study of Informal Finance in Tanzania, Mimeo. (Processed), Overseas Development Institute, London.
- Bardhan, P. 1989. ed. The Economic Theory of Agrarian Institutions. Oxford: Clarendon.
- Bell, C. 1988. "Credit Markets, Contracts, and Interlinked Transactions," in Chenery, H. and T.N. Srinivasan, eds. Handbook of Development Economics. New York: North Holland.
- Besley, Timothy. 1994. "How Do Market Failures Justify Interventions in Rural Credit Markets?" World Bank Research Observer. 9/1, 27-47.
- Besley, T. and S. Coate. 1991. "Group Lending, Repayment Incentives and Social Collateral." Discussion Paper #152, Research Program in Development Studies, Princeton University.
- Besley, T., S. Coate, and G. Loury. 1993. "The Economics of Rotating Savings and Credit Associations." American Economic Review. 83/4.

- Binswanger, H. and M. Rosenzweig. 1986. "Behavioral and Material Determinants of Production Relations in Agriculture." Journal of Development Studies, 22/3.
- Bottomley, Anthony. 1963a. "The Cost of Administering Private Loans in Underdeveloped Rural Areas." Oxford Economic Papers, 15.
- Bottomley, Anthony. 1963b. "The Premium for Risk as a Determinant of Interest Rates in Underdeveloped Rural Areas." Journal of Economics, 77.
- Bottomley, Anthony. 1964. "Monopoly Profit as a Determinant of Interest Rates in Underdeveloped Rural Areas." Oxford Economic Papers, 15.
- Braverman, A. and J. Guasch. 1984. "Capital Requirements, Screening, and Interlinked Sharecropping and Credit Contracts." Journal of Development Economics.
- Chipeta, C. and M.L.C. Mkandawire (1994); Financial Integration and Development in Sub-Saharan Africa: Case Study of the Informal Financial Sector in Malawi, Report Prepared for the Overseas Development Institute, London.
- Datta, S., J. Nugent, A. Tishler, and J. Wang. 1988. "Seasonality, Differential Access and Interlinking of Labour and Credit." Journal of Development Studies, 24/3.
- Deaton, Angus. 1993. Understanding Consumption.
- Hoff, K and J. Stiglitz (1993); A Theory of Imperfect Competition in Rural Credit Markets in Developing Countries, Institute for Policy Reform, Working Paper Series IPR 49, Washington D.C.
- Kandori, Michihiro. 1992. "Social Norms and Community Enforcement." Review of Economic Studies.
- Mauri, A. (1987); The Role of Financial Intermediation in the Mobilization and Allocation of Household Savings in Developing Countries: Interlinks Between Organized and Informal Circuits. The Case of Ethiopia. Paper Presented at the International Experts' Meeting on "Domestic Savings Mobilization through Formal and Informal Circuits: Comparative Experiences in Asian and African Developing Countries", Honolulu, 2-4 June.
- Ravallion, M. 1987. Markets and Famines. Oxford: Oxford University.
- Seibel, H-D (1989); Linking Formal and Informal Financial Institutions in Africa and Asia, Proceedings of the International Conference on Microenterprises in Developing Countries, IT Publications, London.

Soyibo, A. (1994); *Financial Linkage and Development in Sub-Saharan Africa: A Study of Informal Finance in Nigeria*, Report of a Study prepared for the Overseas Development Institute, London.

Stiglitz, J. and A. Weiss. 1981. "Credit Rationing in Markets with Incomplete Information." *American Economic Review*, 17.

Udry, C. 1990. "Credit Markets in Northern Nigeria: Credit as Insurance in a Rural Economy." *World Bank Economic Review*. 4/3.

Udry, C. 1994. "Risk and Insurance in a Rural Credit Market: An Empirical Investigation in Northern Nigeria," *Review of Economic Studies*. 61(3), no. 208, pp. 495-526.

Udry, C. 1995. "Risk and Saving in Northern Nigeria." *American Economic Review*. Forthcoming.

USAID (1989); *Informal Financial Markets: Senegal and Zaire*, Final Report of a Study Prepared for the Bureau for Africa/MDI by Arthur Young.

Von Pischke, J., D. Adams, and G. Donald. 1983. *Rural Financial Markets in Developing Countries*. Baltimore: Johns Hopkins.

World Bank/Regional Program on Enterprise Development (RPED), 1993; *Case Studies of Enterprise Finance in Ghana*, Final Report, Washington D.C.