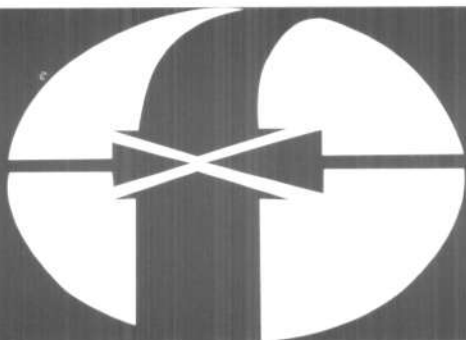


Savings and Development



"GIORDANO DELL' AMORE" FOUNDATION

A Centre for Financial Growth and Development Assistance

established by

Fondazione Cassa di Risparmio della Provincia Lombarda



Quarterly Review - No. 3 - 2005 - XXIX



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TRUST AND SUSTAINABILITY OF MUTUAL SAVINGS AND LOAN INSTITUTIONS*

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1. Introduction

In the last twenty years, development analysts and practitioners have pinned high hopes on the ability of microfinance institutions (MFIs) to alleviate poverty around the world. Examples like Grameen Bank or BancoSol have shown that, contrary to once-conventional wisdom, credit can be extended to the poor without excessive costs, provided that social networks can be mobilized for borrowers who cannot offer collateral security. MFIs, thus, appear to provide an empowering, community based, win-win solution to the poverty trap (Morduch, 1999). The "promise of microfinance" is that capital can be lent by self-sustaining institutions tapping into financial markets, and help lift people out of poverty at little or no cost to donors and governments. Furthermore, MFIs may avoid the problem of credit being diverted into well-connected hands, as happened with the cheap credit schemes in the 1960s and 1970s (Morduch, 1999, 2000; Adams et al., 1984).

Much of this enthusiasm is well placed and the literature is rife with anecdotes of striking success stories. However, there are few systematic analyses of MFIs and moreover, little attention is paid to financial matters (see Morduch, 1999). There is, therefore, a danger that some of this enthusiasm be misplaced as problems may just be stored for later (Rogaly, 1996; Wood and Sharrif, 1997). Of particular concern are Mutual Savings and Loans (MS&L) which raise funds in local communities and offer poor borrowers relatively cheap financial services. However, this can be done only with subsidies¹. Subsidies may not signal a problem if MS&L generate positive externalities in addition to offering financial intermediation. Still, whether or not these externalities are generated and, if so, whether they are large enough to compensate for the cost of subsidies, remains unclear.

Also, self-sustaining MS&L tend to service the "richest of the poor", so that while their impact (i.e., their ability to raise borrowers' income) appears high, their outreach (i.e., the pool of customers benefiting from their services) is limited. Impact and outreach are intimately connected to sustainability and Conning (1999), for example, argues that the tradeoff between outreach and sustainability implies that micro-len-

* The views expressed in this paper do not necessarily reflect those of the ILO.

¹ See Morduch (2000), p. 619 and, Morduch (1999), Section 4.

ders targeting poorer borrowers will have a harder time raising funds². While Paxton and Cuevas (2002) suggest that outreach and sustainability are not necessarily mutually exclusive for credit unions, most authors such as Hulme and Mosley (1996) or Zeller and Meyer (2002), conclude that some trade-off does exist. If these institutions have trouble accessing private capital markets, this is likely tied to their inability to project future cash flows (see Guinnane, 1994; Hollis and Sweetman, 1998; Galassi, 2001, for historical examples).

Defining sustainability as the future ability to raise funds may be too narrow an approach. In fact, as will be shown, in West African mutuals raising funds does not seem to be a problem; yet, according to our results, most of the institutions do not appear to be sustainable. Closely related to sustainability is, in fact, the issue of MS&L's internal organization and incentive structures. As Morduch (1999) points out, "mechanisms matter": Managers need the correct incentives to keep their organisation creditworthy and even though successful at attracting funds, some MS&L may fail to be attractive to borrowers and thus jeopardize their sustainability. Hence, financial sustainability is dependent on institution characteristics. MS&L are a particularly interesting case because of the unlimited liability constraint that differentiates them from other MFIs. Also, they belong to the "broad-based program" category with a wide range of clients and have been identified, in a worldwide survey of 72 programs, as having made the greatest financial progress (Calmeadow, 1998).

By approaching the issue strictly from the supply side, the conventional view of sustainability leaves out demand aspects that are relevant to MS&Ls' functioning. First, the institution is not the only supplier of services, it faces competition from moneylenders. Second, because of legal and regulatory aspects, MS&Ls must attract clients by inspiring trust because borrowing requires membership in the institution which involves joint liability³. Hence if sustainability is related not just to raising funds but also attracting borrowers, the following question should be asked: What makes resorting to a mutual an attractive proposition for a potential borrower?

² Also, there are few systematic analyses of MFIs' impact on poverty reduction (except for Hulme and Mosley, 1996, and Amin, 2003), and a generally accepted methodology has yet to emerge (Hulme, 2000) hence, there is a danger that many programmes may not in fact be achieving their objectives.

³ Why borrowing from MS&L typically involves making a credible pre-commitment (i.e., accumulating minimum savings or accepting joint liability) is reasonably well understood (Besley and Coate, 1995; Ghatak, 1999, 2000). The implications for sustainability, to our knowledge, have rarely been investigated.

In this paper we provide a first answer to that question with data for mutual institutions in West Africa. Specifically, we use a prospective member's cost/benefit calculation to generate an index of MS&Ls' sustainability. The index relates lower borrowing costs obtained by joining a mutual to the potential losses incurred through unlimited liability. It must be emphasized that this unlimited liability principle applies to the institution as a whole and not simply among members of a group obtaining credit. Framing the problem in this way means that our index can alternatively be seen as a measure of the degree of trust a prospective member must have in order to be *ex ante* better off by joining, or as a gage of the MS&L's ability to attract and retain membership. In the second case, the index proxies the MS&L's ability to develop outreach. The advantage of using this index is that it consists of a single number, whose value makes it immediately evident where an MS&L stands in terms of sustainability. The principal use of the index is therefore diagnostic. Moreover, the index we propose complements Yaron's Subsidy Dependence Index (SDI), which evaluates the percentage by which an MS&L's average yield on loan portfolio needs to be increased to make it subsidy-independent (Yaron, 1992; Yaron and Benjamin, 2002).

Our analysis of six African countries belonging to the West African Economic and Monetary Union (WAEMU) shows that most MS&Ls are not sustainable. In effect, the results indicate that only 30% of all existing members belong to institutions that are clearly sustainable, a worrying but not so surprising result especially for practitioners. The situation, however, varies greatly between countries (from good in Burkina Faso, to poor in Senegal and Côte d'Ivoire), and between classes of MS&Ls. Institutions more likely to be sustainable are those where the majority of members are women. In this study low sustainability is often associated with unproductive use of assets. In effect, these institutions appear able to raise funds, but their high liabilities are not matched by strong loan portfolio performance.

The paper is organized as follows: The next section presents the cost/benefit calculation underlying the trust index and some of the comparative static features are analysed. Section 3 reviews the structural and financial characteristics of the mutual savings and loans industry in six WAEMU countries. The results of the computation of the index, and a series of simulations, are reported in Section 4. Section 5 concludes.

2. Theoretical Background

A MS&L involves a contract in which individuals commit resources (savings, time), often without remuneration, in exchange for lower borrowing costs. The market failures that make this form of contract desirable are well understood. Borrowers' true intentions and abilities cannot be directly observed by lenders who, therefore, face a difficult problem when they have to assess the credibility of their customers. In most markets, sellers resort to the price mechanism to sort buyers. However, in credit markets, if sellers adjust their price (the interest rate), they run into two problems: First, higher interest rates may discourage borrowers who have safe but not very remunerative investment projects, increasing the incidence of riskier investment in the bank's portfolio. Second, dishonest borrowers may be willing to accept a loan for higher rates since they do not intend to repay anyway¹. One possible solution is to sort borrowers by asking that they secure the loan against an asset they own. This tends to work well where property rights are defined and enforceable. However, even in this case, poor people are cut off either because of lack of assets or because banks find it too costly to gather information for a relatively low return.

Some of these market failures are addressed by MS&Ls which pool borrower information and assets by members monitoring each other. However, while co-operation is optimal, it is hard to sustain because there may be defectors who leave other members with the liability of the debt. This first mover advantage implies that mutuality is only sustainable if efficient enforcement mechanisms exist. Alternatively, the arrangement is sustainable only as long as prospective members expect that the probability of others' defection is lower than the benefits they obtain from the MS&L, i.e., cheaper borrowing. The greater the benefits, the greater the tolerance for potential defection, but there is always a point where the probability of defection is so high that people simply stay away (Galassi, 2001). The arrangement is then unsustainable. In this section we define this threshold theoretically.

2.1. *The Mutual's Solvency Constraint*

We model the mutual association as a price taker in the capital market, raising a

¹ See for example, Stiglitz and Weiss (1981), Besley et al. (1993), Besley and Coate (1995), Banerjee et al. (1994).

sum Y by offering interest rate r and lending a sum $X(=Y/\theta, 1 < \theta)$ to n borrowers (out of m members, $n < m$) at a uniform interest rate i . The average borrower has a loan of value $x(=X/n)$. We assume the first goal of the mutual is to remain solvent. To achieve it the mutual must balance what it expects to receive from its customers against its costs and financial obligations. In other words, the repayments it expects, $(1+i)X$, must cover administrative costs, C , and financial liabilities, $(1+r)Y$. If the balance is positive, it becomes part of the mutual association's reserves $dA > 0$ and conversely for $dA < 0$.

The MS&L has some latitude in setting the rate it charges borrowers (i), whose alternative may be more expensive credit sources. However, the mutual is not a profit maximizer, and its only constraint is solvency (Galassi, 1996). Therefore, when deciding what interest rate to charge, the mutual must estimate what proportion of the loans will not be repaid. Non-repayment may be of two types: Borrowers may be *unable* to repay because random shocks reduce income flows, or they may *choose* not to repay ("defection"). Let π be the proportion of borrowers that the mutual expects is *able* to repay, and γ the proportion of borrowers that it expects *chooses* to repay. The mutual then sets interest rate i such that,

$$i = \frac{(1+r)\theta + \frac{dA+C}{X}}{\pi\gamma} - 1. \quad (1)$$

For prospective members of the association, the benefit from joining is therefore the difference between this interest rate and the rate available to them on the open market, most likely the rate charged by the village moneylender, r_m .

In case of bankruptcy, if the gap between the sum repaid and the sum owed is greater than existing reserves A , the mutual draws on the resources of its members and the precise liability rules under which the mutual is set up matter a great deal. We will return to this point below. For the time being it is sufficient to point out that the mutual works precisely because the possibility of suffering a loss if defaults are numerous, gives members an incentive to monitor each other (Ghatak, 2000; Armendáriz de Aghion and Gollier, 2000; Impavido, 1998).

2.2. Costs and Benefits of Membership

The drawback to becoming a member of the mutual association is that own assets may be seized by the creditors if other members have defaulted or been unable to repay (called "default exposure"). Individual member liability may be limited or unlimited. Our mutual associations are unlimited liability institutions and we model that case only. The general form of the net benefits obtainable by perspective members is then,

$$B = (r_m - i)X - L, \quad (2)$$

where B is net benefits, and L , liabilities accepted by becoming a member. These are strictly of two kinds: First, the up-front costs, such as membership fees (f); second, in case of bankruptcy, the proportion p of the net total debt. The precise valuation of p depends whether the mutual is established, in which case it has built up reserves to be used against claims, or new, without reserves.

We start by modeling the decision to join an established mutual. A prospective member can expect that, in case of bankruptcy, the association's accumulated assets, A , are seized first, and, only if there are claims outstanding, is their own wealth at risk. In an established, unlimited liability mutual, and assuming that outstanding debts are distributed equally among members, individual liability (including individual default exposure and up-front costs), L_E , is,

$$L_E = f + p \equiv f + \frac{(1 + \pi\gamma)X(1+i) - A}{m - (1 - \pi\gamma)n}. \quad (3)$$

Substituting (3) and (1) into (2) and setting $B=0$ yields

$$\pi^2\gamma^2 + \left[\frac{m}{n} - 1 + \frac{A}{\left[1 + r_m - \frac{f}{X}\right]X} \right] \pi\gamma - \frac{m \left[(1+r)\theta + \frac{dA+C}{X} \right]}{n \left[1 + r_m - \frac{f}{X} \right]} = 0 \quad (4)$$

This equation defines a set of values of γ for which a potential borrower will switch from wishing to remain outside the mutual, even if that means paying higher credit costs, to wishing to join. In other words, for given parameter values, (4) defines the minimum proportion of MS&L members whom an individual must trust in order to be ex ante better-off by joining. Solving (4) for γ yields,

$$\gamma_{UE}^* = \frac{1 - \frac{m}{n} - \frac{A}{\left[1 + r_m - \frac{f}{x}\right]X} + \sqrt{\left[\frac{m}{n} - 1 + \frac{A}{\left[1 + r_m - \frac{f}{x}\right]X}\right]^2 + 4 \frac{m \left[(1+r)\theta + \frac{dA+C}{X}\right]}{n \left[1 + r_m - \frac{f}{x}\right]}}}{2\pi} \leq 1, \quad (5-A)$$

where subscript " $_{UE}$ " stands for "Unlimited liability, Established". The value of γ_{UE}^* is the percentage of borrowers who are expected to repay conditional on being able to do so. It can therefore be seen as an index of the sustainability of a mutual. If $\gamma_{UE}^* > 1$, the mutual is unsustainable, in the sense that a prospective member would have to trust more than 100% of the members to be strictly indifferent between joining and remaining outside.

If the unlimited liability mutual is a new one, or an established one which has failed to accumulate reserves to absorb some of the debt, then, $A=0$ in (3), and (5-A) becomes,

$$\gamma_{UN}^* = \frac{1 - \frac{m}{n} + \sqrt{\left[\frac{m}{n} - 1\right]^2 + 4 \frac{m \left[(1+r)\theta + \frac{dA+C}{X}\right]}{n \left[1 + r_m - \frac{f}{x}\right]}}}{2\pi} \leq 1, \quad (5-B)$$

where subscript " $_{UN}$ " stands for "Unlimited liability, New". Note that the index is based on parameters that anyone who considers joining can observe.

2.3. Comparative Statics

The comparative statics helps to understand the sensitivity of the index to variations in some of its components. To simplify, we rewrite (5-A) and (5-B) as

$\gamma_j = (H_j + Z_j^{1/2})/2\pi$, for $j = (UN, UE)$, noting that the difference between H_{UN} and H_{UE} , and between Z_{UN} and Z_{UE} , is that no reserve has been accumulated (i.e., $A=0$ if $j=UN$). We focus on the effect of 8 observable variables on our trust index. Three are policy variables set by the management of the mutual: A (accumulated reserves), dA (contribution to reserves) and θ (the ratio of outstanding liabilities to loans). Of the remaining 5, one is the interest rate the mutual pays on its liabilities, r . Two relate to membership: The ratio of mutual members to borrowers, m/n , and the proportion of members who can repay their loan, π . Obviously both are indirectly influenced by management policy choices, but we see them as reflecting mostly members' behavior that a prospective member wants to take into account when deciding whether to join. The last two are the joining fee relative to the loan value (f/x), and the operational costs of the mutual (C). The former measures the up-front costs of joining, and the latter reflects the efficiency with which the mutual is run.

Before examining the derivatives in detail (see Appendix), we must stress that, even though the expressions for the partials are superficially identical they are not equal since $Z_{UN} \neq Z_{UE}$, and $H_{UN} \neq H_{UE}$, as is made evident by the fact that $\partial \gamma_{UN} / \partial A = 0$. An interesting implication of our framework is that established mutuals do not necessarily demand lower threshold levels of trust⁵. We will, however, show that increasing A reduces the minimum level of trust members need to have in a given mutual. Therefore high reserves do not of their own make joining a mutual an attractive proposition but higher reserves may allow people to join even if their trust in existing members is relatively low. This is intuitively reasonable and it is encouraging to see that our formulation confirms it formally.

With one exception, the signs of the comparative statics are unambiguous. The minimum share of the mutual's members whom a prospective member must trust in order to find joining attractive increases with dA , θ , r , and f/x , and decreases with π and A . Thus, higher interest payments on the mutual's liabilities (r) or higher liabilities per unit of loan (θ), mean that a prospective member's potential loss from others' default rises when set against the benefits of joining. Greater confidence in others'

⁵ Using (5-A) and (5-B), it can be shown that Z_{UE} is necessarily smaller than Z_{UN} . Assuming that π does not change with whether a mutual is new ($j=UN$) or established ($j=UE$), it follows that we cannot tell analytically whether established mutuals necessarily demand lower threshold levels of trust for prospective members than new ones (i.e., γ_{UE} smaller or greater than γ_{UN}).

behavior is therefore required. A similar reasoning applies to joining fees relative to loan size (f/x). If the up-front cost of membership rises, the potential entrant must trust a higher proportion of members. Equally intuitive is the result that if the repayment rate (π) rises, or existing reserves (A) are higher, default exposure decreases and a prospective member need trust a smaller proportion of existing membership to be inclined to join *ceteris paribus*.

Matters are somewhat less immediate for changes in the contribution to reserves (dA). Strictly, this is a residual value: Only when all payments have been received and all disbursements made is the change in reserves known. However, the interest rate charged by the mutual, i , is in effect set by the *desired* change in reserves given other parameter values. While we cannot observe the mutual's target dA , there is little doubt that if management wishes to build up reserves it must charge higher interest rates (equation [1]). Larger increases in reserves (and higher operational costs), therefore, reduce the benefit a borrower receives from joining the mutual, because they reduce the gap between the moneylender's rate and the mutual's. To offset a lower benefit, a borrower must therefore require a lower *ex ante* default exposure to be just as well off.

One case where the algebraic value of the expression in the table is ambiguous is when the ratio of total members to borrowers (m/n) changes. There are, in this case, two distinct effects captured by the derivative. First, when m/n rises, any default is made good over a larger proportion of non-borrowing members. This reduces a prospective member's individual default exposure, and, therefore, reduces γ_j . This effect is captured by the negative sign in front of $(1+Z_j^{-1})$. However, if a smaller proportion of members are borrowers, holding everything else constant also means that the same amount of interest payments on liabilities must be financed by income from fewer loans. To respect the solvency constraint in (1), the mutual will charge higher interest rates. Thus, the net benefit of joining declines, that is, γ^* rises. The net effect is ambiguous and can only be identified empirically.

One last consideration is in order. In general, the denominators of the partial derivatives tend to assume relatively high values, while the numerators are mostly ratios. As a consequence, all the derivatives tend to be small relative to γ_j and there appears to be no single, dominant parameter in which a change can lower γ significantly. This can be explained by the fact that mutuals are price takers in the money market which restricts the range of policy options. Their equilibrium is a delicate mix of several con-

flicting needs⁶. There is no simple way of making these lenders more generally attractive. However, as it will be shown by our analysis, some parameters can better achieve a lowering of the index value simply because their actual values are very far away from what could be considered reasonable levels.

To summarize, our theoretical framework generates a relatively simple index of trust that a prospective member can use as the value of the index is determined by known parameters. First, for an individual to consider the option of joining, the index must be strictly below 1, indicating that less than 100% of the membership need be trusted for joining. Then, the individual must decide whether he/she in fact trusts at least that proportion of members by comparing the index-value for a given institution to a reservation value. Note that the empirical analysis in this paper rests only on the necessary but not sufficient condition for institutions to attract new members that $\gamma < 1$. Thus, institutions for which the value of the index is substantially higher than 1, have little chance of being sustainable under existing conditions.

3. Mutual Savings and Loan Institutions in WAEMU Countries

The analysis covers six African countries from the Western Africa Economic and Monetary Union (WAEMU): Benin, Burkina Faso, Côte d'Ivoire, Niger, Senegal and Togo. We use a recently developed dataset⁷, which collects general, legal, and financial information from microfinance institutions in the region and presents some unique advantages: First, it is one of the few attempts to collect systematically statistical information from microfinance institutions. Second, it distinguishes clearly between MS&Ls and other types of MFIs such as NGOs. Third, it results from a unified survey applied to institutions in all member countries. Finally, the single currency shared by these countries, which retain their specific financial sector policies and structures, provides control for a number of macroeconomic factors and allows for meaningful cross-country comparisons.

⁶ Significantly, the only partial derivative that is likely to take high values is that of the repayment rate.

⁷ The PASMEC databank has been developed jointly by the ILO and the BCEAO (see ILO/BCEAO, 1997). To our knowledge there is only one other attempt to collect data from MFIs (see, Calmeadow, various years).

The survey started in 1993 and the year covered in this study is 1997, which is the last year the full individual questionnaires were published. Also, after four years of implementation, the survey was becoming more comprehensive^a. Still, the quality of reporting is uneven and information for 1996 is used when more complete. When the information is too incomplete in both years, the institution is dropped from the analysis. As a result, in Niger, 8 out of 10 mutual institutions remain in the sample in Senegal, 25 out of 26, in Benin, 10 out of 11, and, in Togo, 19 out of 20^a. In Burkina Faso and Côte d'Ivoire all the reporting institutions are part of the sample (6 and 9 respectively).

The MS&L industry has grown significantly in West Africa since financial liberalization in the mid-1990s (see Table 1), yet in 1997 it was still small compared to the banking sector with a share below 10% in terms of financial activities or outreach.

Table 1: Relative Sizes of Mutual Savings and Loan Industry

	% Members ^{a/} in Population 1.	Total in banks and MFIs ^{b/} 2.	MS&L Share (%) 3.	MS&L share of MFIs (%) 4.
Deposits				
Benin	8.2	225.3	7.2	99
Burkina Faso	3.0	182.72	4.3	89
Côte d'Ivoire	1.5	1,040.3	0.8	99
Niger	0.4	67.6	1.8	92
Senegal	2.6	443.1	1.7	91
Togo	4.9	140.0	6.5	97
Credits				
Benin		87.6	16.4	91
Burkina Faso		172.8	3.8	64
Côte d'Ivoire		1,144.3	0.3	73
Niger		44.7	1.9	30
Senegal		443.5	1.8	54
Togo		163.4	4.8	90

Source: ILO/BCEAO(1998).

^{a/} Members include men, women and groups. Population aged 15 and over.

^{b/} MFIs=Microfinance Institutions. All amounts in billions CFAFr.

^a For example, in Benin in 1997, 40 MFIs of all types were targeted by the survey and information on 30 was eventually published. For a more complete description of the dataset, see Galassi and Gross (2003).

^a In Benin, the excluded institution represents 2% of total published membership, in Togo, 0.05%. The complete list of sample MS&L is given in the Appendix I in Galassi and Gross (2003).

MS&L are strongest in Benin and Togo and weakest in Côte d'Ivoire and Niger. Worth noting is the fact that, in most countries, the share of credit business is smaller than that of deposits. As it will be seen, this affects the results of our sustainability analysis. Structural and financial characteristics of sample MS&Ls illustrate the level of diversity within and across countries.

Table 2: Characteristics of MS&L Institutions

	Benin	Burkina Faso	Côte d'Ivoire	Niger	Senegal	Togo
Structural characteristics						
1. Number of institutions	10	6	9	7	25	19
- Institutions per 1 mio inhabitants	1.7	0.5	0.6	0.7	2.8	4.8
2. Number of members per institution ^a						
- maximum	217,861	120,000	108,722	5,445	72,217	86,805
- minimum	44	1677	20	440	213	41
3. Membership share of dominant institution	86%	72%	93%	30%	58%	75%
4. HH concentration index	0.748	0.546	0.869	0.272	0.361	0.599
5. Number of agencies						
- maximum	111	107	98	36	74	142
- minimum	1	2	1	1	1	1
6. Share of one-agency institutions	10%	0%	33%	71%	44%	63%
7. Number of institutions with majority of women members ^b (share with maj. women)	4 (40%)	1 (17%)	2 (22%)	2 (29%)	10 (40%)	9 (47%)
8. Average age (years)	3.5	9.2	3.9	2.9	4.4	6.1
Financial Characteristics						
9. Nominal deposit interest rates (%)	2-9	3.3-12	0-6	3-5	0-15	0-7
Nominal lending interest rates (%)	10-30	10-45	10-20	15-36	1.5-25	12-24
10. Inflation rate (%)	4.7	2.2	3.2	2.9	2.3	11.4
11. Average deposit in CFA Fr. (per depositor)	65,907	50,522	69,137	46,100	65,867	86,278
12. Average credit in CFA Fr. (per credit)	168,558	256,583	341,315	229,728	290,258	343,557
% of GDP per capita	38.6	98.9	39.2	100.7	52.1	85.0
13. Weighted average repayment rate (%)	94	97	95	91	92	84
- maximum	100	100	100	100	100	100
- minimum	64	84	72	69	47	65
14. Weighted average savings/credit ratio	1.29	1.22	3.13	1.15	2.43	1.28

Sources: ILO/BCEAO, WB (2000). ^a Includes men, women and groups. ^b Individual members only.

The upper panel of Table 2 deals with structural factors (Rows 1 to 8). The first set of indicators relates to the degree of concentration of the industry. In Row 1, Senegal and Togo have about three times as many institutions (25 and 19 respectively) as Burkina Faso and Niger (6 and 7, respectively). Senegal and Togo also have the denser system with 2.8 and 4.8 institutions per 1 million inhabitants. However, with a denser and larger industry the two countries do not necessarily have more competitive MS&L industries. Other factors, among which institution size, should be taken into account. In all countries, except Niger, there is a dominant institution, which accounts for over 50% of the membership (Rows 2 and 3). In Côte d'Ivoire the market power of the dominant institution is extremely high with 93% of total membership. This is confirmed by the Herfindahl-Hirschman concentration index ($HH=0.87$ and high concentration, $HH=1$, competition, $HH=0$). Benin is a close second with $HH=0.75$. The index also shows there is more competition in Niger and Senegal than in the other countries, yet Niger has one of the least developed systems of mutuals.

The number of agencies per institution also varies greatly across countries. Smaller institutions only have 1 or 2 agencies and larger ones can have over 100. While there seems to be some relationship between population density and the maximum number of agencies (i.e., positive correlation at 0.93), there is no relation between the latter and the size of the rural population. For example, Burkina Faso and Niger have roughly the same share of rural population (around 80%) and their maximum numbers of agencies are at opposite ends of the spectrum (107 and 36 respectively). This suggests that networks of agencies are more likely to be developed in densely populated urban areas than in rural areas. Finally, the share of institutions with a majority of women members, and the average age of the institutions, also vary substantially across countries. In Togo, almost half the institutions have a majority of women members while in Burkina Faso only 17% do. Burkina Faso also has the "oldest" MS&L system (9.2 years) and Niger, the youngest (2.9 years).

To summarize, the picture that emerges from these indicators is one of rather different structures for the MS&L industries across the 6 countries. It appears quite competitive in Senegal and Niger and highly concentrated in Burkina Faso and Côte d'Ivoire. At the agency-level, Niger again is the most open system with 2/3 of the institutions being single-agency ones. Hence, we expect this diversity to have an impact on the degree of attractiveness these institutions offer to prospective members.

Next, we turn to a brief overview of some of the financial characteristics of the

institutions as the MS&L industries are not only structurally diverse but also financially diverse (Table 2, Rows 9 to 14). In Row 9, maximum and minimum nominal interest rates for deposits and loans cover wide ranges of values within as well as across countries. Within countries, the largest spread is observed in Senegal and Burkina Faso while Côte d'Ivoire and Togo exhibit the smallest dispersion. These observations are somewhat inconsistent with the existence of a monetary union and with our earlier conclusions about the relative degrees of competitiveness that identify Senegal as the most competitive system and Burkina Faso and Côte d'Ivoire as the least ones. One reason for the discrepancy may be that some of these mutual institutions are highly specialized by types of clients¹⁰ often linked to specific activities or regions, thereby limiting competitive pressures. Also, information may not flow easily across institutions, and rates do not easily converge. Across countries, part of the differences in rates can be explained by inflation (Row 10), which varies between 2.2% to 11.4%. In Togo, all real deposit rates are negative while real lending rates are positive and relatively high. More surprising, in Senegal, the minimum lending rate is negative (i.e., -0.8%). In Burkina Faso and Niger all real rates are positive and deposit rates are, on average, much lower than lending rates; a situation much more consistent with expectations.

Average deposit and credit values are provided in Rows 11 and 12. While average deposits are very similar across countries, with the exception of Togo, average credits vary substantially. It is twice as high in Togo and Côte d'Ivoire as in Benin and the three other countries lie in between. Average deposits lie between CFAFr.46,100 and CFAFr.86,278; and average credit, between CFAFr.168,558 and CFAFr.343,557¹¹. These amounts are typically small, putting these institutions in the realm of microfinance. In terms of target group, most of them belong to the "broad" category (i.e., average loan value between 20% and 120% of GDP per capita, see Morduch, 1999, Table 2). Finally, the minimum repayment rate (Row 13) ranges from 47% in Senegal to 84% in Burkina Faso. However, weighted averages, with institutions' sizes as weights, show a much similar picture across countries. The average weighted repayment rate is close to 90% in all countries except in Togo where it stands slightly above 84%.

¹⁰ See Appendix I in Galassi and Gross (2003) for a detailed list of the institutions.

¹¹ At the exchange rate of US\$100=CFAFr.74,000, the values are respectively, \$62, \$117, \$228 and \$464.

In short, it is interesting to note that Togo has the most liberal lending policy with the lowest real rates and the largest average credit and, it also has the lowest repayment rate. At the other end of the spectrum stands Burkina Faso with the highest real lending rates, the highest repayment rate and a middle of the range average credit size. The wide variety of structural and financial characteristics confirms that mutual institutions respond to some country-specific factors even within a unified monetary system. The question is whether these specificities reflect a better adaptation to each market and translate into a higher degree of sustainability or whether they exhibit similar inefficiencies.

4. An Evaluation of Mutual Institutions' Sustainability

Computing (5-A) and (5-B) for mutual institutions requires some detailed information and not all of it is readily available. Three components had to be estimated.¹² First, the level of accumulated reserves (A) is not recorded in the survey and, thus, the first part of the analysis is developed for two extreme reserve scenarios. The "pessimistic" scenario uses index (5-B) for all institutions, thereby assuming no institution has accumulated reserves. For the prospective member, this scenario is the riskier. The "optimistic" scenario uses index (5-B) for new mutuals and (5-A) for established mutuals, assuming that, in each of their operation years, they saved in reserves the same amount as in the observation year. Second, the distribution of deposits by terms is not known and two cases are also developed. For each of the above scenarios, liabilities are evaluated at the highest and lowest deposit rate, r , providing maximum and minimum estimates. Third, there is no consistent observation on moneylender rates. Initially, we decided to set it at 40%, which represents the actual lending rate (not including additional fees) multiplied by a factor of 2 to 4 depending on the term and country. This corresponds to the lower bound of a range of rates observed in LDCs (see Gillis et al., 1992, p. 512) and it is similar to the value used in a comparable study by Galassi (2001). Note that in WAEMU countries, the central bank fixes a so-called usury rate, which is the maximum rate that can be charged by microfinance institutions (27%, in 1997).

¹² The exact measures used for individual components are given in the Appendix.

Now we turn to the computation of the indexes. Note that they are calculated taking into account only operational subsidies¹³ and that they are ex-post rather than ex-ante values identified as g_{UE} and g_{UN} .

4.1. Overall Country-Specific Index of Trust

Table 3 provides values for the pessimistic and optimistic scenarios about reserves accumulation with maximum and minimum liability costs. For confidentiality reasons, the results are expressed as weighted averages of individual institutions' g -values. The weights are membership sizes.

Table 3: Weighted average g -values for new (g_N) and established (g_E) institutions

	$g_N (A=0)^a$		$g_E (A=0)$	
	Pessimistic scenario		Optimistic scenario	
	$r=\max$ 1.	$r=\min$ 2.	$r=\max$ 3.	$r=\min$ 4.
Benin				
-weighted ^b av.	1.060	1.059	1.028	1.028
-maximum g	2.656	2.656	2.654	2.654
-minimum g	0.416	0.416	0.395	0.395
Burkina Faso				
-weighted av.	1.024	1.004	0.976	0.957
-maximum g	1.579	1.393	1.578	1.391
-minimum g	0.740	0.649	0.739	0.648
Côte d'Ivoire				
-weighted av.	2.481	2.479	2.413	2.412
-maximum g	5.797	5.797	5.797	5.797
-minimum g	0.255	0.253	0.250	0.248
Niger				
-weighted av.	1.054	1.047	1.034	1.028
-maximum g	1.256	1.239	1.214	1.158
-minimum g	0.141	0.139	0.141	0.139
Senegal				
-weighted av.	2.053	2.024	2.003	1.975
-maximum g	8.301	7.935	7.985	7.625
-minimum g	0.393	0.393	0.365	0.365
Togo				
-weighted av.	1.221	1.164	1.128	1.075
-maximum g	6.213	6.075	6.163	6.025
-minimum g	0.148	0.148	0.147	0.147

^a max, min = computed with the maximum, minimum, deposit interest rate

^b weights are the institutions' membership shares

¹³ Sustainability is usually divided into operational sustainability (i.e., revenues cover operating costs) and, financial sustainability (revenues cover capital costs as well as operating costs). In that sense, our index is based on operational sustainability which is more often reached by MFIs (Morduch, 1999, p.1585)

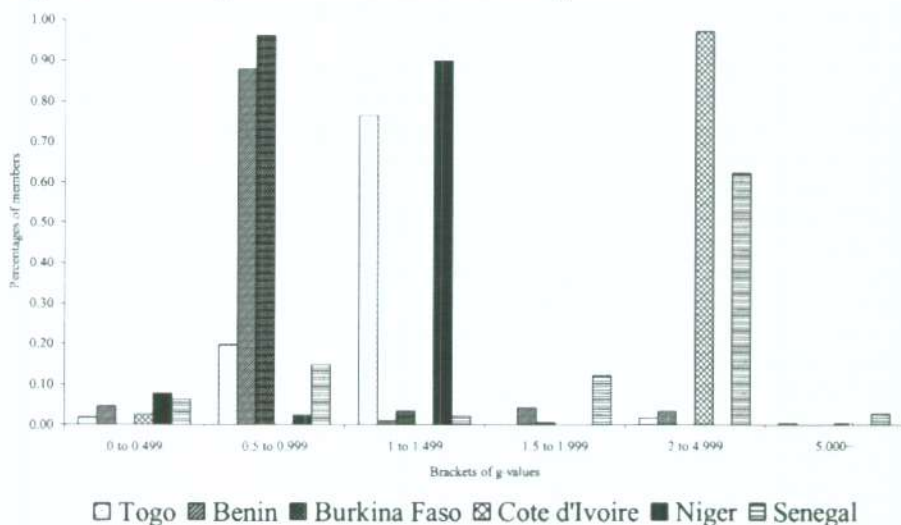
A few results immediately stand out. First, within each country, effects due to the presence of accumulated reserves or to changes in the distribution of liabilities are small. As expected g -values decline with the presence of accumulated reserves (i.e., moving from Column 1 to 3, or 2 to 4) but the impact is small. This result is consistent with the comparative statics exercise, where it was concluded that mutual institutions must strike a fine balance between many competing requirements, and the sheer fact that reserves exist does not, of its own, make joining a mutual a significantly more attractive proposition¹⁴. Similarly, a change in the composition of liabilities from all short term to all long term (or a rise in interest rates) has a negligible impact on the value of the index. From the comparative statics, higher interest rate reduces the benefit obtained by borrowing from the mutual, but leaves the member's cost unchanged and the effect on g is positive but its magnitude is dependent on other parameters. For example, it would be larger if the member-to-borrower ratio were higher. If a smaller proportion of members did borrow, higher rates on deposits would push the g -value higher because fewer borrowers would have to carry a higher load per unit of loan.

Turning to cross country comparisons, Table 3 shows that, on average, only Burkina Faso satisfies the necessary condition for sustainability, i.e., $g < 1$ ¹⁵. Benin, Niger and Togo are borderline cases and Senegal and Côte d'Ivoire exhibit values well above 1. When g -values are plotted against membership (Figure 1), it is clear that only a very small portion of the members belong to institutions with extremely high values of g ($g > 5$).

One worrying result, however, is the large proportion of members in institutions with g -values between 2 and 5 in some countries (Côte d'Ivoire, 97%, Senegal, 62%). In Benin, Niger and Togo members are heavily concentrated in institutions with g -values below 1.5. Only 30% of members across all six countries belong to clearly sustainable institutions (i.e., index value below 1). Hence, MS&Ls are very diverse in their ability to inspire trust.

¹⁴ Also, our assumption on the rate of accumulation of reserves may overstate the actual contributions as it is likely that in the earlier years of operations mutual institutions accumulate little reserves. So the actual impact may be even smaller.

¹⁵ We did not compute significance tests because of the small number of observations in some samples and, sometimes, large standard errors. Also, half the g -distributions are not normal. The $\chi^2(2)$ -test for normality with null hypothesis that skewness and excess kurtosis are jointly equal to zero, are: Benin, 0.676, Burkina Faso, 0.706, Côte d'Ivoire, 0.396, Niger, 8.654, Senegal, 16.312 and Togo, 33.567 with a critical value of 5.99 at 5%.

Figure 1: *Percentages of members for brackets of g-values*

Overall, in our sample of WAEMU countries, about 1/3 of members belong to clearly sustainable institutions and another 40% belong to institutions with $1 < g < 1.5$. This suggests that approximately 70% of the membership is in sustainable or marginally sustainable institutions. While not directly comparable, these results appear to paint a darker picture than what has been found for broad based programmes world wide and for credit unions in Latin America (Calmeadow, 1998; McDonald, 2000). One reason may be that the measures used in those studies are accounting measures, which simply consider revenue and cost in MFIs while our index is more comprehensive. Nevertheless, these results are likely to reflect some imbalances at the institution level and next, we investigate whether the structural and financial features presented in Tables 2 might be at the source of the problems.

4.2. *The Role of Structural Characteristics*

Structural characteristics such as the size of institution, its age and the gender

composition of membership have been identified as factors that might affect financial sustainability (Morduch, 1999). The impact of each of these factors is now evaluated in the context of the most pessimistic scenario (i.e., no reserves and maximum interest rate on liabilities) and the results are presented in Table 4.

Table 4: *Weighted average g-values for some structural characteristics. Most pessimistic scenario ($A=0$; $r=\max$).*

	Benin	Burkina Faso	Côte d'Ivoire	Niger	Senegal	Togo
Size I: 1000 < Absolute membership ≤ 1000						
1. ≤1000	0.702	-	2.632	0.432	1.878	1.656
2. >1000	1.061	1.002	2.478	1.124	2.063	1.204
Size II: 600 < Average membership per agency ≤ 600						
3. ≤600	0.923	1.127	2.939	1.104	1.843	1.737
4. >600	1.074	0.989	2.461	0.908	2.110	1.188
Business experience: 5 year > Age ≥ 5 year						
5. ≥ 5 year	0.639	1.025	2.518	1.064	1.955	1.185
6. < 5 year	1.099	1.003	1.929	1.046	2.078	2.480
Gender: 50% > Women membership ≥ 50%						
7. ≥ 50%	0.602	1.152	0.304*	0.767	1.618	0.786
8. < 50%	1.094	1.005	2.505*	1.083	2.132	1.618

Notes: * value significantly different from 1, at 10%.

Starting with the size of the institution, it is generally argued that large financial institutions are more likely to be sustainable because of the presence of economies of scales. However, in large institutions, recruiting and monitoring individual borrowers is also more difficult (Johnson and Rogaly, 1997). Both arguments may also apply at the agency level. In the first two rows of Table 4, we divided the sample into large institutions (total membership > 1,000; average membership per agency > 600) and small institutions (total membership ≤ 1,000; average membership per agency ≤ 600). For three countries, Benin, Niger and Senegal, institutions with less than 1000 members perform better than larger ones. In some instances, the difference between g-values is sizeable. For example, in Niger, larger institutions have an average g-value almost 3 times higher than small ones (1.1 vs 0.43). At the agency level, in four out of six

countries, a larger membership leads to a lower g-value¹⁶. Therefore, it appears that at the institution or agency level, the argument about economies of scales prevails in most cases and bigger size implies better attractiveness or sustainability.

The expected relationship between age and sustainability is not clear-cut either. On the one hand, with experience, institutions can become operationally more efficient and financial progress improves with age (Morduch, 1999, p. 1589). In Table 4, Rows 13 and 14, Côte d'Ivoire illustrates that argument. On the other hand, there is some evidence that as clients have repeated credit experiences, monitoring become looser and the reimbursement rate falls (Honlonkou et al., 2001, for Benin). Hence, older institutions may become less trustable on this account. In Togo and in Benin, the index increases quite substantially with age suggesting that latter factor dominates.

Interestingly, the gender structure provides the most homogeneous results across countries. On average institutions with a majority of women members are more trustable and therefore, more able to attract new members. The results are quite striking in Côte d'Ivoire, where the value for institutions with a majority of women is well below 1. These results are consistent with the growing evidence from case studies on the success of microfinance for women (Mayoux, 2000). Overall, structural factors do not seem to generate systematic patterns except for gender and the differences in values remain small.

4.3. *The Role of Financial Characteristics*

The results presented so far suggest that mutual institutions, on average, have difficulties attracting potential members. In this section, we examine the sensitivity of the g-values to four clearly observable financial features. Three are at least somewhat under the control of the institutions and relate to operational issues affecting directly sustainability: The default rate (π), the savings/credit ratio (θ), and the relative number of borrowers (m/n); the fourth one is the rate charged by moneylenders. To quantify their role, we conduct simulations addressing the following questions: What if all institutions (in each of the 6 countries) were facing an identical, lower default rate; lower deposit/credit ratio; higher borrower to member ratio? What if moneylenders were

¹⁶ We did not test formally for significantly different means since the samples are split and even less likely to be normally distributed, in this section. We provide tests for significant difference to 1 for information.

charging a higher rate while all other characteristics (financial and structural) remained unchanged? By addressing these questions we can identify the nature of institutions' financial weaknesses. The choice for hypothetical values is justified below and the results of the simulations are summarized in Table 5. Note that the values for the most optimistic scenario ($A > 0$ and minimum rate of interest on liabilities) are reproduced in Column 1 as references for interpretation.

Table 5: Weighted average g -values for various financial characteristics

	Index of sustainability: g_E							
	Most optimistic scenario: $(A \neq 0), \tau = \min$							
	Actual $\pi, \theta,$ $m/n; r_f=40\%$	$\pi=100\%$	$\pi=95\%$	$\theta=0.5$	$\theta=1$	$m/n=1$	$\theta=1, m/n=1$	
	1.	2.	3.	4.	5.	6.	7.	8.
Benin*	1.028	0.962 (-6.1%)	1.013 (-3.5%)	0.521* (-49%)	0.866 (-15%)	0.982 (-4.1%)	0.887 (-13%)	0.930 (-9.2%)
Burkina Faso	0.957	0.930 (-2.8%)	.b	0.462* (-52%)	0.819* (-14%)	0.834 (-13%)	0.751 (-22%)	0.855 (-11%)
Côte d'Ivoire	2.412	2.285 (-5.3%)	-	0.636 (-74%)	1.002 (-59)	1.414 (-41%)	0.796 (-67%)	2.149 (-11%)
Niger	1.028	0.895 (-13%)	0.942 (-8.4%)	0.556* (-46%)	0.951 (-7.5%)	1.015 (-1.3%)	1.015 (-1.3%)	0.918 (-11%)
Senegal	1.975	1.756 (-11%)	1.849 (-6.4%)	0.691 (-65%)	1.046 (-47%)	1.425 (-28%)	0.988 (-50%)	1.777 (-10%)
Togo	1.075	0.887 (-17%)	0.933 (-13%)	0.513* (-52%)	0.905 (-16%)	0.853 (-21%)	0.753 (-30%)	0.965 (-10%)

Notes: * Value significantly inferior to 1, at 10%.

^a Percentage change in parentheses. ^b The actual average repayment rate is equal or superior to 95% (see Table 2).

Starting with the default rate (π), the simulation in Column 2 assumes that all loans are fully reimbursed (i.e., $\pi=1$) while all other parameters are as observed. In such ideal world, Senegal and Côte d'Ivoire still exhibit average index values well above 1. When the more realistic uniform value of 95% reimbursement rate is used, the conclusion remains unchanged. This does not mean that improving reimbursement is not an issue. In countries like Niger and Togo, mutual institutions would have better sustainability prospects with higher reimbursement rates as the index moves clearly below 1. Hence, improved reimbursement rates may improve somewhat the situation but would not be sufficient to solve the sustainability issue in some countries. Note that some of the beneficial effect may be dampened by the rise in operational cost resulting from increased monitoring which is not taken into account by the simulations.

For the deposit to credit ratio (θ), two hypotheses are considered. First, all institutions lend to the limit authorized by the legislation, that is credit is equal to twice the volume of deposits (i.e., $\theta=0.5$)¹⁷; second, a more cautious approach is adopted, and only deposited amounts are lent out (i.e., $\theta=1$). In Column 4, it is immediately clear that changing the deposit/credit ratio has a major impact and if all institutions were lending up to the legal limit (at the existing conditions), the index would drop below 1 in all countries. Moreover, the more prudent hypothesis of a deposit/credit ratio equal to 1 (in Column 5) still leads to sustainable systems in all countries. The improvement in the index value for the two worst performing countries would be close to 50% while in better performing countries such as Benin, Burkina Faso and Togo it would be around 15%. These results clearly point out to inadequate deposit/credit ratios, and mutual institutions hold relatively too many financial liabilities for the risk they bear. Note that this situation has affected co-operative lenders in the developed world as well (Rasmusen, 1988). Yet, can the deposit/credit ratio be lowered at no additional cost? Operational costs may not increase if the ratio of members to borrowers remains constant. However, in the light of the fact that the average client of these institutions requires small loans, a large *ceteris paribus* change in θ may not be realistic. It is, thus, worthwhile analysing what happens if a larger proportion of members were to borrow. When it is assumed that all members are also borrowers ($m/n=1$, Column 6), the average g -value declines in all countries. As seen in Section 2, this arises when the decrease in expected cost or "liability load" on each unit of loan dominates the effect that rising interest rates have on γ to maintain the solvency constraint. Consequently, further improvement in the sustainability index can be gained by increasing lending through an increase in the number of borrowers. The combined effects of more credit and a higher proportion of member involved with borrowing (Column 7) produce the largest gains in sustainability in the two countries with highly unsustainable systems (Côte d'Ivoire and Senegal). Though it is likely that these gains would come about only with a rise in administrative costs due to the larger number of files to handle, it would seem that under efficient management, improved lending policies would make institutions more sustainable.

Finally, the opportunity cost of becoming a member depends on the cost of alternative funding, i.e., the moneylender rate. When the hypothesised rate is increased

¹⁷ Article 50, Section IV, Décret d'Application. (PARMEC/UMOA, 1993).

(from 40% to 60%, in Column 8), conclusions remain unchanged. Sustainability of the institutions improves but the changes in the g -values are small and the impact of this externally set parameter is relatively small compared to the factors directly under the control of mutual institutions.

To summarize, very few mutual savings and loan systems, on average, fulfill the necessary condition for trust. However, adjustments in some financial parameters would make them much more appealing to potential members. In particular large gains in trust could be achieved through more expansive credit policies. Realistically, this could only be achieved through increasing the number of borrowers among members (and not just credit awarded) and additional operational costs should be expected. Nevertheless, the gains from both fronts, increased volume of credits and relative number of borrowers, are likely to more than compensate for the additional costs. The most commonly cited factor for the inability of MS&L to reach large-scale membership is the lack of product diversification (Richardson, 2000) and improving credit availability and diversity may go a long way in raising the number of member borrowers. Interestingly, better management of risky clients (i.e. lowering of the default rate) may not bring significant results and the externally set moneylender rate has almost no impact. Hence it appears that improved attractiveness is directly under the MS&Ls' management control.

5. Conclusion

In this paper we provide a rather somber picture of the ability of WAEMU mutual savings and loans institutions to attract members and ensure their sustainability. In some sense, our results confirm what many experts in the field already know. However, our analysis provides at least three major contributions to the debate on sustainability of mutual associations: First, it shows that mutual savings and loan systems perform differently across WAEMU countries. Systems in Burkina Faso, Togo and Benin are globally more sustainable than those in Senegal and Côte d'Ivoire. Second, structural factors bear little responsibility in these differences except for one: Institutions with a majority of women member are systematically more likely to be sustainable. In general, neither experience in the business, nor size is clearly a determining factor. Third, financial factors relating to the management of credits play a major role in all countries. Specifically, while liability cost (i.e., interest rate) does not affect the index significantly, the savings to credit ratio does and particularly in countries where mutual institutions perform badly. Finally, while low reimbursement rates are often blamed for the lack of sustainability of these institutions, we find that it is by far not the most important factor. Reaching 95% reimbursement rate in all institutions would have an impact only in Niger and Togo, which already have close to sustainable systems.

From this analysis, it is clear that an improvement in sustainability through inspiring more trust in prospective members is directly under the control of mutual institutions. In particular, lending practices must be addressed. In terms of further avenues for research, this study is a first step in the direction of designing a fully operational index that identifies and quantifies precisely the shortcomings in MS&L financial management, possibly by introducing dynamics in the optimization process.

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Appendix

Comparative Statics^a

Variable	$\frac{\partial \gamma_{UN}}{\partial j=UN}$	$\frac{\partial \gamma_{UE}}{\partial j=UE}$
$\partial(dA)=\partial C$	$\frac{m}{\pi n \left[1 + r_m - \frac{f}{X} \right] X Z_j^2} > 0$	$\frac{m}{\pi n \left[1 + r_m - \frac{f}{X} \right] X Z_j^2} > 0$
$\partial \theta$	$\frac{m(1+r)}{\pi n \left[1 + r_m - \frac{f}{X} \right] Z_j^2} > 0$	$\frac{m(1+r)}{\pi n \left[1 + r_m - \frac{f}{X} \right] Z_j^2} > 0$
∂r	$\frac{m\theta}{n\pi \left[1 + r_m - \frac{f}{X} \right] Z_j^2} > 0$	$\frac{m\theta}{n\pi \left[1 + r_m - \frac{f}{X} \right] Z_j^2} > 0$
$\partial(m/n)$	$\frac{\frac{m}{n} + 2 \frac{(1+r)\theta + \frac{dA+C}{X}}{1 + r_m - \frac{f}{X}} \cdot \left[1 + Z_j^2 \right]}{2\pi Z_j^2}$	$\frac{\frac{m}{n} + 2 \frac{(1+r)\theta + \frac{dA+C}{X}}{1 + r_m - \frac{f}{X}} \cdot \left[1 + Z_j^2 \right]}{2\pi Z_j^2}$
$\partial \pi$	$\frac{H_j + Z_j^2}{2\pi^2} < 0$	$\frac{H_j + Z_j^2}{2\pi^2} < 0$
$\partial(f/x)$	$\frac{2 \frac{m}{n} \frac{(1+r)\theta + \frac{dA+C}{X}}{\pi Z_j^2 \left[\frac{f}{X} \right]^2} > 0$	$\frac{2 \frac{m}{n} \frac{(1+r)\theta + \frac{dA+C}{X}}{\pi Z_j^2 \left[\frac{f}{X} \right]^2} > 0$
∂A	---	$\frac{-1}{2\pi \left[1 + r_m - \frac{f}{X} \right] X} \left[1 + \frac{1}{2Z_j^2} \left[\frac{m}{n} - 1 + \frac{A}{1 + r_m - \frac{f}{X}} \right] \right] < 0$

Notes: ^a To simplify, we rewrite (5 A) and (5 B) as $\gamma_j = (H_j + Z_j^{-2})/2\pi$, for $j = (UN, UE)$, noting that the difference between H_{UN} and H_{UE} and between Z_{UN} and Z_{UE} is that no reserve has been accumulated (i.e., $A=0$ if $j=UN$). Note also that for any j , $Z_j > 0$, $H_j < 0$ (because $m/n > 1$). Finally, $\partial \gamma_j / \partial C = \partial \gamma_j / \partial (dA)$, so that only one of these need to be calculated to have a complete picture of the comparative statics.

Definitions of the variables

A	: Accumulated reserves over the years of operation. $A=0$ for pessimistic scenario. $A=n \cdot dA_{1997}$ with n =age of institution for optimistic scenario.
r	: Interest rate on deposits. The highest/lowest rate quoted for various types of deposits used to compute maximum/minimum liabilities.
r_m	: Moneylender rate set at 40%.
Y	: Total deposits in CFA Fr. = demand deposits + term deposits.
X	: Total credits in CFA Fr. When total credits not reported, total credits allocated during the year were used.
x	: Average credit = Total credits /number of credits (total credits allocated during the year/number of credits allocated during the year).
$\theta=Y/X$: Deposits to credit ratio.
π	: Average success rate of investment projects for which credit is allocated. Approximated by the loan repayment rate = total amount repaid/total credits that have reached maturity.
dA	: Contribution to reserves. Actual contribution in 1997 or 1996. When unreported an estimated contribution is computed following the central bank regulation which states that loan loss reserve payments should be: 20% for loan payment with 0-3 month delay; 40%, for 3-6 month delay; 80%, for 6-12 month delay and, 100%, for delays beyond 12 months (ILO/BCEAO, 1997). When only total loan overdue is reported, a 40% flat rate is applied.
C	: Administration costs net of operational subsidies.
f	: Entry fee for new members. In case of range, the minimum value was chosen.
m	: Number of members.
n	: Number of borrowers as approximated by the number of loans.

Abstract

In this paper we use a simple cost-benefit framework to build a "trust index" and evaluate mutual savings and loan institutions (MS&L). The index calculates the minimum proportion of members that an individual must trust to be ex ante better off by joining an unlimited liability MS&L. Based on observable financial characteristics, the index is also a measure for institutions' sustainability. When used to evaluate mutuals in West Africa, it shows that, on average, the minimum share of members to be trusted is very high. Only a third of the institutions are clearly in a position to attract new members and they are likely to be women-based mutuals. Structural factors do not appear to play a role but, among financial factors, lending practices are identified as the major source of poor attractiveness from mutual savings and loan institutions.

JEL CLASSIFICATION NUMBERS: G21, Z13, O16, O55.

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