

ROSCAS IN UGANDA – BEYOND ECONOMIC RATIONALITY? –

LISA PETERLECHNER

Abstract:

This article studies why people join Roscas. Both economic and social motivations are taken into account. Theoretical hypotheses about why people join are tested empirically against the results of a field study in Eastern Uganda. It is found that the Roscas in the sample are economically rational in the context of an inadequate formal financial sector. It is also found that their social value plays an important part both in the efficiency of Roscas and in the motivation of their members. The strength of Roscas seems to lie in the combination of economic rationality and social value. The two are interdependent and reinforce each other.

JEL: R51.

Keywords: ROSCA, saving groups, economic rationality, social value, Uganda, Eastern Africa

1. INTRODUCTION

Twenty-seven percent of the Ugandan population save with informal financial institutions, whereas only 22% save with formal financial institutions (Dfid, 2007). If so many people prefer informal over formal financial institutions, one has to wonder about their reasons. In particular, one institution stands out for its popularity and the controversy over its utility: the Rotating Savings and Credit Associations (Roscas). Roscas can be found all over the world and their membership can reach up to 95% of the population. An estimated 2.2 million Ugandans are Rosca members. In a Rosca, all the members contribute a fixed amount of money each week, the total of which is attributed to one of the members. This is repeated until every member has received the fund at least once. In other words, the funds “rotate”; total profits, from an accounting point of view, are zero. At the same time, like any insti-

tution, Roscas involve transaction costs. At first sight, therefore, Roscas might seem to induce these costs without producing profits.

Up until the 1990s therefore, most authors focused on the purely social functions of such groups, without hypothesising a rational economic foundation, defined as the maximization of economic profit. Since the nineties, however, economists have started to become more interested in the phenomenon, and to put forward a number of hypotheses that would explain the existence and persistence of Roscas from a rational economic point of view: even where 'profits' in the narrow accounting sense were non-existent, Roscas could offer real economic benefits to agents. Those hypotheses have so far been tested separately, by different authors, using different methodologies and different survey data. This article tries to combine social and economic considerations in one comprehensive survey, and to look at the interactions between those two aspects of the phenomenon. Our field study is therefore based on a questionnaire which allowed us to account for both economic and social motivations for Rosca membership.

As Roscas' mode of operation, and indeed people's motivations for joining them vary widely depending on the national economic and the regional cultural context, we restricted our sample to two districts in the region of Eastern Uganda. The findings of our article will mainly apply to this specific example and do not pretend to be exhaustive. However, it will also be possible to draw some more general conclusions.

Confronting the theoretical hypotheses with our empirical results, we find that the Roscas of our sample are economically rational in the context of an inadequate formal financial sector. We also find that their social value plays an important role in the efficiency of our Roscas, and in the motivation of their members. The strength of Roscas lies in the combination of the two: economic rationality and social value. The two characteristics are interdependent and reinforce each other.

The article is structured as follows. First, we will demonstrate the seemingly irrationality of the functioning of Roscas, and give a brief overview of the existing literature trying to explain the prevalence of Roscas. In section three, we will see how the mode of operation of the Roscas we examined allows for a considerable reduction of transaction costs. The next section confronts three theoretical hypotheses that explain Roscas in an economically rational way with the results from our survey, and discusses the Roscas' comparative advantages over the formal financial sector. Section five looks into the significance of the social factor. Section six concludes.

2. ROSCAS: EXPLANATIONS FOR THE PREVALENCE OF A SEEMINGLY UNPROFITABLE INSTITUTION

Efficient mobilization of savings is an essential dimension of financial and of economic development (Levine, 1997, Lewis, 1955, Solow, 1956, Nurkse, 1961, McKinnon, 1973, Gersovitz, 1988, Sirri and Tufano, 1995). The access to multiple investors allows for bigger investments which a single investor could not, or would not want to, finance. At the same time, it allows investors to make smaller investments, to diversify their risk and to dispose of higher liquidity. However, in order to mobilize savings, financial institutions have to bear costs. Firstly, they need to overcome transaction costs caused by the interaction with many different and often small-scale savers. These costs are especially high in developing countries which are mostly characterized by a large, but poor population; poverty implies little financial resources, a high propensity for consumption, and little savings. Moreover, a majority of the population lives dispersed in rural areas, which are often difficult to access because of missing or bad infrastructure. Secondly, financial institutions need to overcome informational asymmetries, and inspire savers with enough trust that they are ready to give over control of their savings; which again is especially difficult in developing countries with a high percentage of illiterate people who do not trust arrangements based on written contracts. In many developing countries, commercial banks have thus far proved incapable of overcoming these costs. Informal financial institutions have proved to be more successful in these regards and often replace commercial banks in their role as mobilizers of savings. Thus it appears to be important to understand their functioning and to determine how effective and efficient they are in improving people's wellbeing.

2.1 *A zero profits institution?*

Roscas, in West Africa also known as *tontines*, are the most important informal saving collecting institution in developing countries and even in some developed countries (Lélart, 1991; Gugerty, 2005; Levenson and Besley, 1996; Adams, 1998). Average adult membership can be as high as 80%, and they can mobilize up to half of a country's savings (Bouman, 1995). There are significant regional and national differences in the functioning of Roscas, as they are very much adapted to the local socio-economic structures. The basic characteristic that all Roscas share is the rotative principle, meaning the regular paying of a fixed contribution which is distributed to one of the members at each meeting. At each meeting another member receives the

contributions of all the other members, until everyone has received the fund once. Usually, the cycle then starts over again. The Roscas we examine are random, that's to say, at the beginning of the cycle, everyone draws a number – which will be his or her placement for the coming cycle.

Looking at this basic functioning of random Roscas, it is obvious that there is no direct gain involved. Everybody receives exactly the amount he or she has given or will give. Total revenue does not exceed total costs. With p being the pot and N the duration of one cycle and the number of members,

everyone gives:
$$\frac{p}{N} \times N = p \quad [1]$$

and everyone receives:
$$p$$

However, there are differences between members as to the moment when participants receive the fund. Standard economics assumes individuals to have time preference for money, meaning that they prefer to consume now than consuming later. If they have to postpone consumption they want to be compensated for the loss in utility which is thereby caused. In a Rosca, the first-placed member can advance his consumption in time; in other words, he receives a loan from the other group members, which he pays back throughout the cycle – but without interest. The last member to receive the fund has postponed his consumption in time, in other words has saved throughout the cycle, and gets, at the end, only exactly his own savings back – again without interest. To sum it up, taking time preference into account, and considering a finite period of one cycle, the first placed members are winning, whereas the last placed members are losing.

However, despite the fact that the median member, once time preference is taken into consideration, does not win a posteriori, a priori, the expected gains are still zero for everyone. Taking into account a discount rate d which is the same for all members, the perceived value of what everyone is giving, would be:

$$\frac{p}{N} + \frac{p}{N}(1-d) + \frac{p}{N}(1-d)^2 + \frac{p}{N}(1-d)^3 + \dots + \frac{p}{N}(1-d)^{N-1} = \frac{p}{N} \times \sum_{i=0}^{N-1} (1-d)^i \quad [2]$$

The perceived value of the benefits would be p for the first member to receive the fund, $p(1-d)$ for the second one and so on until $p(1-d)^{N-1}$ for the last member to receive the fund. In a random Rosca, the probability of being

first, second, ..., last placed member is $1/N$. This way, the expected benefits for a member are:

$$E = \frac{1}{N} \times p + \frac{1}{N} \times p (1-d) + \frac{1}{N} \times p (1-d)^2 + \frac{1}{N} \times p (1-d)^3 + \dots$$

$$+ \frac{1}{N} \times p (1-d)^{N-1} = \frac{p}{N} \times \sum_{i=0}^{N-1} (1-d)^i \quad [3]$$

The expected benefits thus equal the subjective value of what everyone is giving:

$$\frac{p}{N} \times \sum_{i=0}^{N-1} (1-d)^i = \frac{p}{N} \times \sum_{i=0}^{N-1} (1-d)^i \quad [4]$$

The expected gain, which is the probability of winning or losing multiplied by the amount you win or lose, is always zero.

Instead of time preference for money, one could also consider inflation, which decreases the real value of money over time.

Although a priori, expected gains equal zero, a posteriori, there are big differences between the members. Strong incentives are therefore needed to convince late-placed members to stay in the group once the ranks are known; just as it requires strong incentives to convince early-placed members to continue contributing once they have received the fund. The risk of people leaving, and the measures adopted to fight these risks, induce costs. Moreover, as in any institution, Roscas also induce transaction costs, consisting of the efforts to organize the meetings, to attend the meetings, to enforce payments and group decisions, and so on. Finally, members have less flexibility in the amounts they want to save and the time they want to take out their savings. In other words, Roscas are repeated zero-sum games for the members and induce transaction costs and reduce their flexibility. It is thus necessary to take a closer look at the reasons for rational members to join.

2.2 Theories trying to explain the prevalence of Roscas

In academic literature, two groups of explanations can be distinguished: one describes Roscas as following a social rather than an economic rationale; the other looks for economically rational explanations.

The first group places Roscas outside of the principles that rule modern economics, and look at them in the context of traditional society. Inspired by

Polanyi (1944), they do not look at them from a modern market perspective but think of them in terms of an institution ruled by the principle of reciprocity.¹ According to the principle of reciprocity, relationships between people are based on a continuous sequence of gifts and counter gifts.² The transfers are inseparable from human relations, or rather, are subordinate to human relations and social bounds (Laville, 1994). Maintaining the social bounds is considered to be more important than the creation of wealth, or as Granovetter (1985) puts it, obtaining recognition in the group of affiliation is the ultimate objective. The economy is embedded into the social framework. In this sense, Lélart (1991) believes that the reason for the prevalence of Roscas is their rootedness in the African mentality and the fact that they perfectly respond to the needs of the population. According to him, this is due to the importance of personal relationships between the members, which is reinforced by the solidarity between them. The social factor constitutes the real foundation of these associations. Jean-Louis Lespès (1990) also notices the absence of material profit and thinks that what people are looking for via the participation in those groups are purely social benefits, an increase in social prestige and greater social integration. For him this is also the explanation for the efficiency of Roscas: people react strongly to social pressure – an efficient constraint that hardly induces costs. Without saying so, he thereby implies social benefits to be greater than transaction costs, which makes it rational for people to participate.

The second group focused on the economic rationale. With the help of different hypotheses it is proved that it does, economically speaking, make perfect sense to join a Rosca. Besley et al. (1993) and later Van den Brink et al. (1997) show that when people want to save for the purchase of an indivisible good, membership in a Rosca reduces the waiting period for all but the last ranked member. They also establish the conditions that make joining a Rosca preferable to the use of the savings and credit services from the formal financial system. Anderson (2002) looks at Roscas from an intrahousehold point of view. According to her, membership in a Rosca is mostly a strategy a wife

¹ Polanyi distinguishes four different principles of economic behavior, each of which is associated with an institutional model. The first principle is the one of domestic administration where everyone produces for its own consumption and the consumption of the entity one identifies with. The second principle is the one of reciprocity: relations between people are based on a durable progression of gifts. According to the third principle, the principle of redistribution, production is given to a central authority which is responsible of redistributing it. The market constitutes the fourth principle.

² As suggested by Marcel Mauss in his essay "The Gift" (*Essaie sur le don*, 1923, 1924), the gift is not only a material object; it also engages the honor of the giver and the receiver.

employs to protect her savings against claims by her husband for immediate consumption. Finally, Gugerty (2005) suggests that Roscas are mainly a collective mechanism for individual self control in the presence of time inconsistent preferences. Those three hypotheses are all inscribed in a context of a weakly developed formal financial system, which is difficult for rural people to access.

In the following these theories and approaches are examined and it is determined to what extent they explain the prevalence of Roscas, which of them are the most viable, and how they might be interrelated. To do so, we will proceed to an analysis in terms of costs and benefits of Roscas. In the next section we will focus on transaction costs generated by the group, and thereafter on Roscas' possible economical and social benefits to the members.

3. REDUCING TRANSACTION COSTS THROUGH A HUMANE MODE OF OPERATION

As Roscas have so different modes of operation from one region to another and motivations are likely to be influenced by reasons depending on culture and the national context, the survey focuses on a limited sample of Roscas in the Eastern region of Uganda. We interviewed the chairpersons of nine different groups in Soroti and Kumi district (cf. Appendix 1), and completed questionnaires with 92 members of the same groups (cf. Appendix 2). The analysis of the interviews and questionnaires provides the information needed to draw a detailed picture of the mode of operation of the groups examined. We will thereby see that transaction costs are lower than expected, which constitutes an important intermediary result of this article.

The point of departure of our argument was to compare costs and benefits of Roscas and recognise that, at first sight, it might appear to be irrational to join a Rosca, as the expected profits for any member are zero, while the group nonetheless generates transaction costs. Moreover, by their nature as an informal small-scale institution, which furthermore is aimed at the very poor, Roscas are supposed to have high transaction costs. They do not have any legal foundation. No written contracts protect the engagements. No judiciary authority can be consulted to rule over conflicts. Decisions cannot be legally enforced with the help of the executive power. Furthermore, group members are often poor. Because of their irregular and mostly small income, they might run an increased risk of default. As poverty also affects health, they are also more likely to die earlier or to fall sick and become unfit for work. Final-

ly, Roscas' basic working principle, that is to say the rotation of funds, represents a big risk in itself as it encourages default. Members who are attributed a late spot have an incentive to leave at the very beginning whereas those who receive the money early could have an interest in leaving right after. However, the operating mode of the Roscas from our sample allows for a considerable reduction of these risks and (thereby also) of transaction costs.

3.1 Group size and income

The Rosca size varies between 3 and 35 members. The two largest groups are those from the villages, the two smallest groups are those with the highest contributions. Contributions vary between 1000 Shs a week (corresponds to € 0.32) and 250,000 Shs a month (€ 79.55). Generally, a slight tendency can be observed for larger groups to have smaller contributions (linear coefficient of -887, $R^2 = 0.4125$, significant at a 10% level (p-value 0,0158) (graphic 1, Appendix 3)). As a matter of fact, larger groups might prefer smaller contributions because of the long waiting time. This corresponds to results in literature which say groups with higher contributions will be more selective in their membership in order to be sure that the repayment capacity of its members matches the level of contributions (Van den Brink and Chavas, 1997). In our sample, we could readily observe that the two groups with the highest contributions were the only ones who said that they would not accept anyone to join the group; for them the main condition for joining was to work at the same workplace. This automatically implies having a similar salary and, most of the time, coming from a similar socio-economic background. More generally, our sample revealed a light positive correlation (linear coefficient of 0.33) (graphic 2, Appendix 4) between the average income of the group members and the level of contributions. This way, the potential risk of default can be reduced. These results confirm the ones obtained by Van den Brink and Chavas (1997) who also found a positive correlation. However, it has to be said that income information is not always very reliable, especially for farmers who are mostly subsistence farmers, selling only a small part of their production. They do not usually keep track of their revenues and expenses, and the figures they declared in the questionnaires are often only rough estimates.

3.2 Governance

Except for two groups, all of the Roscas we examined had a written constitution. One of the two without a written constitution said that it had had one which every member now knows by heart. The other group without

written constitution only consists of three members and is embedded in the workplace. As their boss knows about the group and the group rules, he can function as a superior justice in case of differences, and thereby replace the written constitution. Except for this same group, all of the groups have an elected board with at least one treasurer, a secretary and a chairperson. These functions are honorary positions which are not paid and thus induce no additional costs. In most cases the secretary organizes the meetings and the treasurer collects and keeps the money. The separation of those function decreases the risk of corruption. Moreover, all important decisions are taken by consensus. This is possible thanks to the reduced group size, the fact that most people know each other and come from similar socio-economic backgrounds, and the frequent meetings without time constraints.

3.3 Meetings

Most groups meet regularly once a week and meetings are not limited to any specific time period but last until all important matters have been discussed. Often, they last up to three hours. Several rules exist to guarantee a minimum level of discipline during the meetings. In most of the groups, it is forbidden to quarrel, people must respect one another, talk one after the other, and listen to each other's views. And very importantly, members have to come on time; otherwise they have to pay a fee. As a matter of fact, 39.6% of the questioned members said that there were never quarrels at the meetings, 57.1% thought people were sometimes quarrelling and only three respondents thought they were often or always quarreling during meetings. Moreover, the large majority described the atmosphere during the meetings as "friendly" (65.6%), about a quarter of the respondents even thought it to be "cheerful" (26.7%) and only a small minority (7.8%) perceived the atmosphere to be "businesslike," whereas nobody thought it to be hostile.

Presence at meetings is mandatory, and the second most cited rule. However, this rule appears to be flexible and adjustable to the specific needs of the members. In fact, even though 90.9% say they regularly attend the meetings, 73.3% have missed a meeting at least once. No group condemns the absent member without knowing the reason for his or her absence. As they all know each other and mostly live near to each other, it is easy to check why someone did not show up. Such check-ups are not perceived as some unpleasant duty but more like a natural concern for the missing member. Most absences in the groups were due to personal illness, sick children, death in the family or other important commitments. In such cases, the other members generally "just understand" and, if necessary, often even help the mem-

ber in trouble. Only one group asks for a fine in case of absence, no matter what the reason. Still, absenteeism is perceived to be the main problem of the group by 16.4% of the members.

3.4 Contributions and repayments

The most cited problem is, however, the delay in contributions (21.9%). At the same time, "contributing on time" is also the most cited rule. Fifty-six percent of the questioned have already failed to pay at least once. The main reasons cited were death in the family (53 respondents), the absence of money (27 respondents), sickness (7 respondents) and a sick child (2 respondents). Enforcing the timely payment of contributions might be quite difficult as there is no legal framework and no executive power as such. This might explain why in most of the cases, the group simply waited (35.9%), or even helped the group members to pay the contribution (23.1%). People accept delays when they are justified by serious problems, as they know that they could be easily the next ones to be hit by a problem and to depend on the benevolence of the group. Only in 23% of the cases was the member who did not pay fined.

However, when a person entirely refuses to pay, measures are taken in order to enforce payment. Before taking any punitive action, the group always tries to find out why the person refuses to pay and tries to talk to the member. Some groups also give the defaulting member some more time. But once the deadline is exceeded and the member still refuses to pay, the group will go "for recovery" to the house of the defaulting member and "pick any item worth the money." In other words, instead of costly judicial intervention, people just go to the house to confiscate some property if a person refuses to pay. This procedure costs nothing but time. And as in Ugandan villages, time is mostly not considered to be "scarce", the price is not high. In some cases, the defaulting member is moreover automatically eliminated from the group. Only in those groups which consist of professionals of the same organisation is the procedure slightly different, as the money can be directly deducted from the salary. According to the chairmen of the groups, it is rare for members to refuse to pay.

3.5 Leaving the group

Among the risks which have to be managed is that of "involuntary departure" due to death. In Uganda the probability of dying between fifteen and sixty years is at around 50% (World Health Organization, 2008), so the

possible loss of members due to death is a problem to be taken seriously. In some of the groups, the members have thus to register an heir when joining the group. The heir must continue to pay the contributions of the deceased. Most groups, however, don't ask for any reimbursement, and consider the loss to be part of their contribution to the family of the deceased. Again, this is not perceived as a cost to bear, but rather as a social obligation they are eager to fulfill. If a member dies before his or her turn to receive the fund has arrived, the money is collected and given to the family, often before the actual time of distribution.

More problematic is the risk of people intentionally leaving the group before the end of the cycle. There is an incentive for those who were attributed a late rank to leave the group right after the distribution of ranks, and an incentive for those who receive the money early to leave as soon as they have received the pot. However, this does not seem to be a subject of special concern to the Roscas we examined. Only in one out of the nine groups had someone ever left after having received the money and before the end of the cycle. In only two groups had anybody left before his turn. In both cases the departure was due to moving to another district. If somebody wanted to leave before his turn arrived, some groups would simply give his money back right away, others would give it later, and others would not give any money back, which, of course represents an incentive for members to remain. Leaving after having received the pot is not welcomed, but allowed as long as the departing member immediately pays all of their outstanding contributions.

Of course, members could still defy those rules. But as we saw before, if a member just stops paying, people will go to his or her house and take items of equal value. The only alternative, therefore, would be to disappear. The cost of disappearing, however, appears to be very high: one would have to give up one's house, land, job and entire social network. Compared to the relatively low contributions which are to be paid (pot sizes range from Shs 25,000 (€ 8.25) to Shs 600,000 (€ 198)),³ disappearing is very unlikely to pay off in the context we study. Also, it is not astonishing that people don't leave the group as the cycles are repeated. Like in the classic prisoner dilemma, individuals who might have an interest in defecting if there was only one game will prefer to cooperate if the game is repeated (Gugerty, 2007). The

³ One might consider € 198 to be enough money to consider disappearing with it. However, the Roscas collecting such high amounts are those which take place within formal workplaces. Costs for disappearing would thus include losing a comparatively well paid job. Considering the difficult job market situation, disappearing would not pay off.

groups we examined have existed for between 2 and 20 years. This means that all of the groups have worked for more than one cycle. Individuals with a long-term perspective therefore had an incentive to cooperate, that is to say, to stay in the group, no matter what rank they get in the first cycle, in order to be able to participate again in the next game.

The Roscas of our sample all function in a way that reduces risk and transaction costs. Especially significant in facilitating transactions is the fact that the members all know each other personally. Problems are discussed, members are visited in their homes, and decisions are taken by consensus. People are often in similar situations and can thus better understand each other's problems and assess the truthfulness of excuses for absences at meetings or delays in contributions without having to apply any long and standardized process. The only real cost factor is time, which is not valued very highly in rural Uganda. The success of this particular way of operating can be shown by the fact that in only one of the nine groups had there been a case of cheating. Low transaction costs alone are, however, not sufficient to explain the high participation rate in Uganda and many other developing countries. What are the explicit advantages of participating? What is it that motivates people to participate? What gains do members expect to make? Are these gains higher than the costs? Is it rational for an individual to join? The following section will attempt to provide an answer to these questions.

4. GAINS FOR ROSCA MEMBERS: THEORY AND EMPIRICAL RESULTS

In this part we will examine three hypotheses that provide for potential gains as a result of Rosca membership, and determine to what extent they are applicable to our sample. We will then relate the results to the people's preference of Roscas over formal financial institutions and finally give an overview of the social gains which Rosca membership can provide

4.1 The Intra-Household Conflict Hypothesis

Anderson (2002) presents as a first possible hypothesis for the existence of Roscas intrahousehold conflicts. Participation in a Rosca might be a wife's strategy to protect her savings from her husband. As a matter of fact, in large parts of the developing world, women usually devote a higher proportion of their income to family needs (goods for children and for general household consumption) than men, who use at least part of their income for personal

consumption (Bruce 1989). The goods that women want to purchase tend to be indivisible and require saving. Women have thus a higher preference for saving than men, who prefer immediate consumption. Due to the unequal distribution of power within the household, a woman alone would not be able to enforce her savings preferences over the man's preference for immediate consumption. When participating in a Rosca, better protection of women's savings is possible via two different mechanisms: Roscas provide a forced savings mechanism that the woman can more easily impose on her household, as her own preference for saving is supported by the pressure of the group for timely contributions. Alternatively, she might participate without her husband's knowledge. In this case, membership would enable her to physically remove the money from the house, and thereby decrease the probability of her husband finding it. When the pot is taken home, the husband may still decide to use it for his personal consumption. However, once there is enough money collected to purchase the indivisible good (e.g. school fees, books for children, bed sheets, animals), it is more likely that he will approve the purchase. Thus, the husband may be willing to afford the indivisible good *ex-post*, once all the money is there, even though, *ex-ante*, he was not willing to save at all.

As shown by Anderson's study of Roscas in Nairobi (2002), as well as by our survey, the money received is mostly used for family matters. Of the total respondents, 42.4% invested it productively (purchase of livestock, land, or investments in personal small-scale businesses), 35.9% said they had used the money for school fees and books for their children, 16.7% used it for the purchase of household items and only 3.3% used it for their personal use.

However, contrary to the predictions of the intrahousehold conflict hypothesis, male respondents are not more prone to spending the fund on personal use than female respondents. The only difference as to their spending behaviour is that they do not spend any money on household items but privilege schooling of the children instead. The importance of education expenditures might be due to the particular context of Uganda, where government largely promotes the importance of education, which is perceived to be the only way to get out of poverty. Finally, the groups that we examined are often mixed. 34% of our respondents are male. Most importantly however, in 94.4% of the cases, the family of the member knows about the membership. And in a majority of cases (54.9%), there were even other family members participating in the same group. It is thus highly improbable that women use the groups to hide money from their husbands. Even though the intrahousehold conflict hypothesis may be true for certain groups and regions, our data cannot validate it as a motivation for people to participate in the Roscas in our sample.

4.2 The Lump Sum Hypothesis

A second model explaining possible gains from Rosca membership is the lumpiness hypothesis. The lumpiness problem deals with individual preferences for an indivisible good which represents for the individual a high marginal utility for current consumption. Roscas allow all but the last-ranked individuals to purchase the good earlier than if they saved on their own. The expected waiting period for the average member, that is to say, the member with the middle rank, is reduced by half. This could provide a genuine motivation for an individual to join a Rosca. However, this hypothesis does not take into account the possibility of borrowing from a bank. By taking a loan from a bank, the individual could enjoy the benefits of the indivisible good immediately, but they would have to pay interest (as well as bank fees and transaction costs for time, transportation etc.). The interest to be paid must therefore be compared to the potential benefits of the indivisible good. Van den Brink and Chavas (1997) show that joining a Rosca is more profitable than taking out a loan, as long as the benefits of the indivisible good are higher than twice the interests paid. Instead of borrowing, the individual could also decide to save at a bank and benefit from interest on these savings. For the average member, this solution is preferable, provided that the interest obtained is greater than the benefit they will derive from the indivisible good. Roscas' efficiency therefore depends on the opportunity costs both of borrowing and of savings deposits. In developing countries, interest rates on deposits are generally quite low, whereas interest rates for borrowing are quite high, which would, in theory, leave a large range for Roscas to be efficient.

Money used for indivisible and profitable goods?

As we have seen before, a large proportion of members (42.4%) use the money they receive for some kind of productive investment. In most cases, this is clearly an indivisible good like a goat, a cow, a pig, or even, in some cases, a small piece of land. In other cases it is not clearly defined, as people just said to invest or reinvest the money in their business. However, it is highly probable that those investments are indivisible goods, as otherwise they would not have to have waited for the pot to proceed with the investment.

Of all the respondents, 35.9% used the money principally for the education of their children. Education does not immediately yield a profit. However, the sooner a child gets educated, the sooner he/she will finish and be able to work, and thereby contribute to the family income, or at least, stop consuming family income. Thus, even though the benefits are not immediate, there is a relatively high marginal utility for current consumption compared

to future “consumption” of education. Also, the good is mainly indivisible as school fees need to be paid at once.

Purchases were made by 16.7% of respondents in the form of household items and other equipment which can mostly be considered as non-productive, but still indivisible; people mentioned notably mattresses, bedding, sauce pans and other cooking utensils. And even if the marginal utility for present consumption for these kinds of items cannot be measured in monetary terms, people probably still prefer to use them at the earliest possible opportunity, in order to improve their wellbeing immediately. The sooner they can purchase those items, the higher their utility. Instead of considering the potential benefits of the indivisible good, for our sample, it might be more appropriate to talk about the discount rate individuals attribute to the consumption of the indivisible good, which does not change anything essential in the theory.

Time preference for money

So far, the lumpiness hypothesis seems to be applicable to our sample. However, one result of the survey disturbs the picture. When questioned, people do *not* give proof of a high time preference for money. The lumpiness hypothesis supposes that the earlier an individual receives his lump sum, the higher his or her utility. More than a quarter of the respondents explicitly did not want to get the money in the beginning and another 39% are indifferent to their rank. This contradicts the assumption that all individuals have a preference for immediate consumption. Apparently, people have different temporal preferences for the individual good. This seems to make sense, as school fees are to be paid at a certain time of the year, and an individual might thus prefer not to receive the money at the beginning of the cycle, so as to avoid the risk of spending it on other things (a point which we will further examine in the next section). Even though this partly puts into question the lumpiness hypothesis as laid out beforehand, it does not contradict the efficiency of Roscas. Different temporal preferences can even increase the efficiency of Roscas if they are complementary. Even though efficiency then seems to be reduced due to the randomness of the choice of ranks, most Roscas are flexible enough to allow for switches in rank, as long as both parties agree to it.

Roscas as an insurance against inflation

The lump sum argument can also be approached in a different way, a treatment which we have not found in the literature but could constitute a very important rationale for the use of Roscas. Even if the indivisible good an individual wants to purchase does not yield any benefits, and people do

not have an explicit high time preference for it, participation in a Rosca can be advantageous in the presence of inflation. Roscas can, in fact constitute an insurance against inflation. As we have seen in section 1, the expected gain of Rosca members is zero, no matter how high inflation is. Membership in a Rosca thus allows individuals to save money and accumulate a lump sum without being penalized by inflation. If they saved at home, however, they would lose in purchase power due to inflation.

Supposing an individual would, at home, save exactly the same amount (p) as in a Rosca and with the same regularity p/N over N periods, the real value of his or her expenses would be the same as in a Rosca:

$$\frac{p}{N} + \frac{p}{N}(1-d) + \frac{p}{N}(1-d)^2 + \frac{p}{N}(1-d)^3 + \dots + \frac{p}{N}(1-d)^{N-1} = \frac{p}{N} \times \sum_{i=0}^{N-1} (1-d)^i \quad [2]$$

However, he can only receive the full sum at the end of the process, of course, which means that he is in the same situation as a last ranked Rosca member. As we have seen in Section 1, the last placed member always loses. Precisely, he or she receives:

$$p(1-d)^{N-1} \quad [5]$$

$$\frac{p}{N} \times \sum_{i=0}^{N-1} (1-d)^i > p(1-d)^{N-1} \quad [6]$$

As the real value expenses are always superior to the real value gains (see mathematical demonstration, Appendix 5), an individual saving at home in a context of inflation is always losing. As in a Rosca, when the expected gains are equal to the expenses it is more profitable for an individual to save in a Rosca rather than at home.

Here again, people might prefer to save in a bank to the participation in a Rosca. However, in Uganda, interest rates for savings hardly ever cover for inflation. With 2% interest and 5% average inflation, real interest is negative; in other words, people lose purchase power (albeit less than if they were saving at home) when saving in a bank. For individuals wishing to purchase an indivisible good, Roscas are thus the best possible alternative.

4.3 The Time Inconsistency Hypothesis

The lumpsum hypothesis seems to be a valid reason for rational individuals to join a Rosca. However, Roscas might provide an additional advantage.

Putting money aside over a certain period of time in order to accumulate a sum large enough to purchase an indivisible good is not always easy. Roscas can provide a commitment mechanism that binds the members' hands and "forces" them to respect a certain saving pattern. This potential benefit is what we will examine in the third hypothesis, the hypothesis of time inconsistency.

As Gugerty (2005) puts it, Roscas can protect participants from preferences that change over time. If standard economic theory suggests that individuals have preferences that are constant over time, psychological evidence on preference formation shows that self-control problems are very common (Ainslie, 1992) and that, in many situations, individuals have a declining rate of time preference (Frederick, Loewenstein and O'Donoghue 2003). In other words, individual preferences might change as the date of action approaches. In our case it would mean that an individual who planned in period 0 to save until period 3, might not put aside the money in period 1 or take out the money in period 2 as his preference for saving declines. He must thus find a way of committing himself into the future. In a Rosca, funds are given to the group and cannot be retrieved. Moreover, Roscas can allow individuals to commit to spending the saved money on specific goods.

Do members bind their hands as to their spending patterns? Of all the respondents 60.5% report to have decided at the beginning of the cycle what they will do with the money (17.4% decide in the middle, and only 22.1% decide once they have gotten the money). A majority of the members (52%) have already gotten advice from the others on what to buy with the money. In six out of the nine groups examined, members have, moreover, to justify the use of the money afterwards. Often, the chairman even follows up and verifies the purchases. The degree to which members have to commit to a spending pattern thus depends significantly on the different groups.

Rosca membership has, in all groups, positively affected the saving behaviour of participants. Even though 91% of the members have saved even before joining the group, 74% of them claim to have saved less before (22% have saved about the same and only 4% have saved more). This is understandable as 69% of them have previously saved only at home, 19% with friends, and just 12% with an institution. Being a member in a Rosca seems thus to have helped people increase their savings rate.

A personal interview with a member of a Rosca in Kampala (interview, Love Potya) illustrates once more how far people are ready to go in order to save. Her group is an extreme version as the members contribute their entire salary. Four employees of the same organization, every month, give their whole salary (around Shs400,000 = € 130) to one of them. She says that before joining the group, she spent all of her salary on eating, new clothing and

partying, and had never been able to put enough aside to buy anything big. Thanks to the Rosca, she was able to afford a two bedroom house on her own, with all the necessary furniture. Within a year, she "had built her life." She says: "*When you are given your portion you can buy something huge like a sofa set or a cooker. (...) During the next months, you eat very little, sometimes only once a day and you do not buy anything new. It helps you to be economical and to budget your money wisely.*"

Despite the constraints and commitment, there is a certain degree of flexibility which allows members to react in case of problems. In case of an emergency, or any other problem which makes it difficult for a member to pay his contribution, the group most often understands and accepts to wait until the following meeting, or provides some other kind of help. Repeated default of payment, however, leads to exclusion from the group. Participation in a Rosca thus seems to protect time inconsistent individuals from their change of preferences, while allowing for some flexibility in case of real problems.

The time inconsistency hypothesis can be developed one step further by saying that individuals do not only want protection from themselves, but also against claims from their relatives. In a closely-knit society with extended families and a social obligation to help each other like in Uganda, it is actually difficult to save on one's own, as there will always be someone asking for money. Social and moral obligations make it nearly impossible to refuse when one has the money a relative asks for, as the following statement shows: "*People feel obliged to give to the family when they have money. But it never stops. There are so many reasons people need money for. For example, just last week my cousin came to town and gave me a financial outline for his wedding,*" (interview, Christopher Musoke). Membership in a Rosca makes it possible to not actually *have* the money (and therefore not being able to give it) and still to save. In this sense, Ambec and Treich's (2003) suggestion that Roscas are financial agreements that help individuals to avoid social pressure for income sharing appears to be very reasonable.

Nothing in our data contradicts the time inconsistency hypothesis. Moreover, personal interviews and examples of other savings institutions confirm the importance of the "forced commitment." We can thus assume that the time inconsistency problem represents a second important rationale for the people in our sample to join a Rosca.

4.4 Roscas' Comparative Advantage over the Formal Financial Sector

For the Roscas we have examined, a combination of the lump sum hypothesis and the time inconsistency hypothesis give good reason to join a

Rosca. People do so in order to commit themselves to saving in order to get a lump sum for the purchase of an indivisible good. Still, it seems as if formal institutions could have many advantages compared to Roscas as for the flexibility of amounts to be saved or borrowed, predictability of the waiting period, decreased risk due to legal contracts and so on. Moreover, conventional saving and borrowing is supposed to attribute the market price to the money borrowed or saved, whereas in a Rosca, loans are distributed randomly and for free.

Availability

Most authors attribute the extended use of Roscas, compared to formal financial institutions, to the non-availability of the latter. The rarity of banks, at only one agency per 80,000 Ugandans (Dfid, 2007), is certainly part of the explanation. Moreover, banks are strongly concentrated in big cities, mainly Kampala. For the area of our survey, there is one Stanbic and one Barclays agency in each of the two district capitals. For villagers, it can still take up to 5 hours or more to reach one, as they often do not have means of transport at their disposal.

Accessibility

Even if the distance does not dissuade people from using commercial banks, they might still be prevented from accessing them due to the insufficiency of their funds. A study from Dfid (2007) of the financial sector in Uganda found that the principal barrier for using formal and semiformal institutions is “lack of money”. As a matter of fact, in order to benefit from interest which cover at least long-term inflation (5%), one has to have a minimum balance of Shs1,000,000⁴ which is, even for the members of the richest groups, more than twice their monthly salary.

As for loans, they start at Shs550,000 (Stanbic Bank). Supposing an average interest rate, applied to creditworthy customers of 19.11%(BoU), a loan period of two years and a minimum income to repayment ratio of 33%,⁵ only people with an income greater than Shs81,000 could afford a loan. This would be the case for no more than 23.2% of the Rosca members in our sample. Moreover, at most banks, loans are only given to formally employed people, yet only 22.1% of our sample are formally employed. Thus, most of the Rosca members studied here cannot access financial services.

⁴ At Crane Bank if you leave it for at least one month.

⁵ Which is the maximum ratio usually accepted.

Mutual exclusivity?

It is only partly true that Roscas, or other informal financial institutions, substitute formal institutions where they are not available or accessible. Participation in Roscas and in formal financial institutions is not necessarily mutually exclusive. In Uganda, about 19% of all Rosca members also use commercial banks (Dfid, 2007). In our sample, 64.4% are, aside from their Rosca group membership, also involved in other savings or credit activities, with commercial banks totalling 15.5%. Of those who are not involved in any other saving or credit activity, 57.7% report that it is not possible for them, 11.5% have never thought about it, and nearly a third (30.8%) are not interested. This last fraction is particularly striking and warrants closer investigation.

Banks' lack of attractiveness

Why are people not interested in saving in a formal institution? In order to elucidate this point, we asked people to give the advantages of their group compared to a bank; 27.1% said it is less complicated to get to money, 14.3% mentioned the distance factor; 12.9% preferred the group because of the absence of banking fees; 10% thought they did not have to wait as long; 8.6% thought the group was easier to approach; 7.1% liked the friendship and understanding in the group; and another 7.1% preferred the group because of the absence of bureaucracy. Other answers included: availability of help in the group which was not available in a bank, greater reliability, and exposure to less pressure.

In other words, banks are perceived, by many of those questioned, to be complex, difficult to approach, bearing long waiting periods, excessive bureaucracy, significant pressure, and on top of all, seemingly unjustified banking fees. In the groups, they do not face those problems, and, in addition, they can benefit from friendship and understanding, and get help in difficult situations. For all of these reasons, 78.3% of the respondents claim that they would stay in the group even if they could save with a bank.

Besides purely rational calculations in terms of profits, the choice of people to join a Rosca or to use formal banking services is also strongly influenced by more psychological factors. People do not only want to maximize their profits, they also need a framework in which they feel comfortable and understood.⁶ In the next section we will examine in greater detail how Roscas manage to convey this feeling of comfort and mutual understanding.

⁶ One has to mention here that with the ongoing liberalization and thus growing competition in the banking sector, Ugandan banks see themselves obliged to change their strategy and to apply more client-friendly policies and more attractive offers also for small scale savers in more remote parts of the country.

5. THE SOCIAL FACTOR

The social aspect is definitely not the only argument that makes people decide to join a Rosca, as we have seen in the previous parts; it represents, however, an important added value, which contributes considerably to the attractiveness of Roscas – and helps lower transaction costs.

5.1 *Sharing more than money*

Roscas appear to be about more than money. When asked for the most important element of their membership amongst *money*, *meetings* and *the other members*, only 14.6% answered “money.” The majority (58.5%) of the respondents considered all the three of them to be the most important. It is thus not surprising that during the meetings about half of the time is dedicated to discussions about other subjects than money. And most people (60.7%) got more than financial support from their fellow members in order to realize their projects. According to Sendi Richard, this is what makes Roscas beneficial for people: in addition to sharing money, they also share ideas.

5.2 *A feeling of belonging and equality*

Sharing of knowledge, ideas and problems is the most cited reason (27.5%) when Rosca members were asked in what sense they consider their relation with the group members different from their relationship with with people of similar status (neighbors, for instance). The other reasons were togetherness and unity (17.5%), friendlier members (15%), members who can help in case of problems (15%), fewer quarrels with members (12.5%), and that there is more trust (5%). Most of the members (66.9%) see the others several times a week outside the meetings and consider them friends. The majority of the respondents (56%) say that they now have more friends than they did before joining the group.

Often, the meetings are important social events for the participants (Germidis, 1991). People, especially women, enjoy getting away from the house for some hours and meeting friends. This seems to be even more important as Ugandan society is increasingly moving from a community-based to an individualistic society. People miss the community aspect as they want to come together, talk, share experiences, and learn from each other and from the elders (interview Christopher Musoke). Especially in cities, where individualization has advanced most, and people often suffer from isolation, the feeling of belonging which the group conveys is essential (interview, Paul Bukuluki).

In the group they feel they are heard, and if people feel powerless when interacting with the formal financial system, they do not have this feeling in their group. An overwhelming majority (90%) of the respondents claim to feel that they have the same power as anyone else in the group and that their opinion is heard as much as anyone else's. This is also confirmed by the fact that all of them talk at least sometimes during the meetings (35.6% always, 31% often, 33.4% sometimes). The atmosphere during the meetings is, as we have seen before, mostly perceived to be friendly.

5.3 Trust

More than two-thirds (70.8%) of those interviewed claim to trust every single person in the group. Several studies have found a higher level of trust within Roscas than outside. For instance, a recent survey on Trust in Rural Cameroon by Etang et al. (2008) found that membership of a common Rosca is a key determinant of trust and reciprocity in the village; Rosca members are significantly more confident that they can trust each other. Trust experiments showed that they really behave in a more trustworthy way. The trust comes from the very personal relationships between the members and is far from being naive. Everyone is very conscious about the fact that he or she uses the savings of the others and they feel a strong moral obligation, enforced through social pressure, to honor their engagements (Germidis et al., 1991). Trust is thus reciprocal and allows a considerable reduction of transaction costs. Some people even think trust to be the main foundation on which Roscas are based (interview Christopher Musoke). Moreover, Rosca membership gives a positive signal to the outside world: everyone knows that if a person has been in a Rosca for more than one cycle, it means that he or she can be trusted. Membership in a Rosca can thus bring advantages for the members outside the group as well. Nongovernmental organizations, for instance, prefer to carry out their projects alongside pre-existing organized groups that have been proven to act in a responsible manner, rather than collaborate with individuals without any track record.

5.4 Solidarity

The feeling of belongingness and trust leads to solidarity. Solidarity is a feeling of responsibility and mutual dependence within a group of people who feel morally obliged towards each other. Problems encountered by one of the members concern the entire group.

Solidarity is, as a matter of fact, an important feature of the groups. When

people experience problems, they can rely on their mates for help. All (100%!) of the members feel that the others would support them if they were in a difficult situation. Interestingly, most of the people (56.1%) feel that they would be helped by more people now than prior to joining the group. Out of the large majority (89.9%) that has already experienced such a situation, only two did not get the help they had hoped for. The others received mainly financial help (82%), physical assistance (8.1%) or advice (4.1%).

Most members are ready to help their fellow members. The flexibility of the rotating principle can be easily used for this purpose, for example, by switching ranks so that those who need it most can get the money first. Only 8.3% would not agree to wait if someone else needed the money more. A large majority (65.4%) would wait for two meetings or even more, many even until the end of the cycle. More than that, greater than half of the respondents (50.6%) would even definitely renounce some of the money in order to assure for the continuing of the group. This confirms Lélart's (1991) statement about the importance of mutual help and assistance, be it in the form of advice, information sharing or financial arrangements. This does not mean that people are not rational. If people renounce parts of their profits in order to help others, they do so knowing that anyone else would do likewise. Rather than pure altruism, one could thus speak of cooperation, which is always advantageous when people know each other well and "the game" is repeated an uncertain number of times.

These results show that the membership in the group creates a group spirit. People are more ready to help each other than otherwise and they know that they can rely on their fellow members. The group thus conveys a sense of security and belonging. People are ready to renounce part of the potential financial profits in exchange for social benefits. This can be perfectly rational as people, while doing so, still try to maximize their personal utility; only here, the definition of utility goes beyond purely material wealth.

6. CONCLUSION

The objective of this article was to get a better understanding of why people join Roscas. We tried to take into account economic and social motivations in order to get as comprehensive a picture as possible. We found that the strength of Roscas lies in the combination of economic rationality and social value. Even though, at first sight, costs exceed revenues, we could confirm that Roscas are economically rational in the context of an inadequate formal financial sector. In our sample, transaction costs appeared to be low,

thanks to small community-based structures with effective risk management and a mode of operation based on voluntary efforts, social pressure and flexibility. People who wish to purchase an indivisible good have a rational interest in joining Roscas as they represent an efficient means for committing themselves to saving for it, and allow them to protect themselves against inflation during the period of saving. People prefer saving with Roscas rather than with formal financial institutions as the latter are difficult to access, insufficiently adapted to their needs, and impersonal. The very personal character of Roscas presents an additional value to members. The members know each other and rely on one another in the case of problems. The feeling of belongingness to the group is highly valued and not easily put at risk, which decreases the risk of default and defection, and thereby transaction costs. The social component thereby reinforces the economic efficiency of the institution.

Of course, these conclusions are drawn from the empirical material of our specific sample and thus apply, above all, to our sample. On a more general level, the Roscas we studied can be considered as an example of an economic institution whose success is caused by the efficient combination of economic benefits and social value. The social added value can render the institution even more efficient by lowering transaction costs and increasing individual wellbeing. If it is true that rational individuals try to maximize their wellbeing, the term wellbeing needs to be understood in a context which goes beyond material benefits. Wellbeing is also about relationships, about security, about feeling understood and about the feeling of belongingness. For economic institutions to be successful they also need to convey trust and understanding; they need to adapt to the culture of the people. Beyond being rational, individuals are also social beings; just as economic institutions are also social constructions (Granovetter, 2002). It appears to be important to take this aspect into account when analyzing them.

References

Articles and Books:

- Adams D.W and M.L. Canavesi de Sahonero, 1989, "Rotating Savings and Credit Associations in Bolivia", *Savings and Development*, Vol. 13, No. 3, pp. 219-235.
- Ainslie G., 1992, *Picoeconomics: The Strategic Interaction of Successive Motivational States Within the Person*, Cambridge University Press, Cambridge.
- Ambec S. and N. Treich, 2003, "Roscas as Financial Agreements to Cope with Social Pressure", *CSEF Working Papers*, No. 103, University of Naples, Italy.
-

-
- Anderson S. and J.-M. Baland, 2002, "The Economics of Roscas and Intrahousehold Resource Allocation", *The Quarterly Journal of Economics*, Vol. 117, No. 3, pp. 963-995.
- Besley T., S. Coate and G. Loury, 1993, "The Economics of Rotating Savings and Credit Associations", *The American Economic Review*, Vol. 83, No. 4, pp. 792-810.
- Besley T., S. Coate and G. Loury, 1994, "Rotating Savings and Credit Associations, Credit Markets and Efficiency", *Review of Economic Studies*, Vol. 61, No. 4, pp. 701-719.
- Bouman F.J.A., 1995, "Rotating and Accumulating Savings and Credit Associations: A Development Perspective", *World Development*, Vol. 23, No. 3, pp. 371-384.
- Bruce J., 1989, "Homes Divided", *World Development*, Vol. 17, pp. 979-991.
- Etang A., D. Fielding and S. Knowles, 2008, "Survey Trust, Experimental Trust and ROSCA Membership in Rural Cameroon", *BWPI Working Papers*, Vol. 44.
- Frederick S., G. Loewenstein and T. O'Donoghue, 2003, "Time Discounting and Time Preference: A Critical Review" in Loewenstein *et al.* (Ed.s), *Time and Decision*, Russell Sage Foundation, New York.
- Germidis D., D. Kessler and R. Meghir, 1991, *Systèmes Financiers et Développement: Quel Rôle pour Les Secteurs Financiers Formel et Informel?*, Centre de Développement de l'OCDE, Paris.
- Gersovitz M., 1988, "Saving and Development", in H. Chnery and T.N. Srinivasan (Ed.s), *Handbook of Development Economics*, Vol. 1, Elsevier.
- Granovetter M., 1985, "Economic Action and Social Structure: The Problem of Embeddedness", *American Journal of Sociology*, Vol. 91, pp. 481-510.
- Gugerty M.K., 2007, "You Can't Save Alone: Commitment in Rotating Savings and Credit Associations in Kenya", *Economic Development and Cultural Change*, Vol. 55, pp. 251-282.
- Laville J.-L., 1994, *L'Économie Solidaire: Une Perspective Internationale*, Hachette Littératures.
- Léart M., 1991, "Les Informalités Financières: Le Phénomène Tontinier", in J.-L. Lespès, *Les Pratiques Juridiques, Économiques et Sociales Informelle*, PUF, pp. 249-267.
- Lespès J.-L., 1990, "Les Informalités Tontinières: Traditions et Innovations", in M. Léart, *La Tontine*, John Libbey Eurotext, Paris, pp. 323-346.
- Levine R., 1997, "Financial Development and Economic Growth: Views and Agenda", *Journal of Economic Literature*, Vol. 35, pp. 688-726.
- Lewis A., 1955, *The Theory of Economic Growth*, Unwin Hyman.
- McKinnon R.I., 1973, *Money and Capital in Economic Development*, The Brookings Institution.
- Mosley P. and A. Verschoor, 2005, "The Development of Trust and Social Capital in Rural Uganda: An Experimental Approach", *Sheffield Economic Research Paper Series*, No. 2005011, The University of Sheffield, Department of Economics.
- Nurkse R., 1961, *Problems of Capital-Formation in Underdeveloped Countries*, Oxford University Press.
-

- Polanyi K., 1944, *The Great Transformation: The Political and Economic Origins of our Time*, Beacon Press: Boston.
- Rutherford S., 1999, "The Poor and Their Money, An Essay About Financial Services for Poor People", Institute for Development Policy and Management, Manchester.
- Servet J.-M., 2006, *Banquiers Aux Pieds Nus*, Odile Jacob, pp. 298-305.
- Sirri E.R. and P. Tufano, 1995, "The Economics of Pooling", in Dwight B.C. *et al.* (Ed.s), *The Global Financial System: A Functional Perspective*, Harvard Business School Press, pp. 81-128.
- Solow R.M., 1956, "A Contribution to the Theory of Economic Growth", *Quarterly Journal of Economics*, Vol. 70, pp. 65-94.
- Van den Brink R. and J.-P. Chavas, 1997, "The Microeconomics of an Indigenous African Institution: The Rotating Savings and Credit Association", *Economic Development and Cultural Change*, Vol. 45, No. 4, pp. 745-772.

Reports:

- Bank of Uganda, 2008, *Annual Report*.
- CIA World Factbook (www.cia.gov/library/publications/the-world-factbook)
- DFID, 2007, *Results of a National Survey on Access to Financial Services in Uganda, Final Report*, DFID's Financial Sector Deepening Uganda project.
- IMF, 2008, *2008 World Economic Outlook*.
- Republic of Uganda Ministry of Finance, Planning and Economic Development, *Uganda National Report For the Implementation of the Programme of Action for the Least Developed Countries for the Decade 2001-2010*.
- UBOS, 2002, *2002 Uganda Population and Housing Census Main Report*.
- World Bank, 2009, *World Development Indicators database*.
- World Health Organization, 2008, *World Health Statistics*.

Personal Interviews:

- Aemro Selassie, Abebe. Personal interview, May 8, 2009.
Senior Representative, IMF regional office Uganda.
- Bukuluki, Paul. Personal interview, April 25, 2009.
PhD Student in Peace Studies, Consultant, Makerere University.
- Etwino, Enock. Personal interview, April 26, 2009.
Economical Advisor, DANIDA.
- Klilly, Twinomugisha. Personal interview, May 7, 2009.
Human Resource Manager, Africa 2000 Network.
- Love, Potya. Personal interview, May 10, 2009.
Employee at ADA.

Musoke, Christopher. Personal interview, May 11, 2009.

CKM consultant, Dfid financial sector deepening project.

Nakanwagi, Rosette. Personal interview, May 11, 2009.

Public Relations Officer, Microfinance Support Center of the Government of Uganda.

Okwi, Eunice. Personal interview, May, 1, 2009.

Teacher in Moroto, Eastern Uganda.

Seamwa Kajoro, Irene. Personal interview, May 7, 2009.

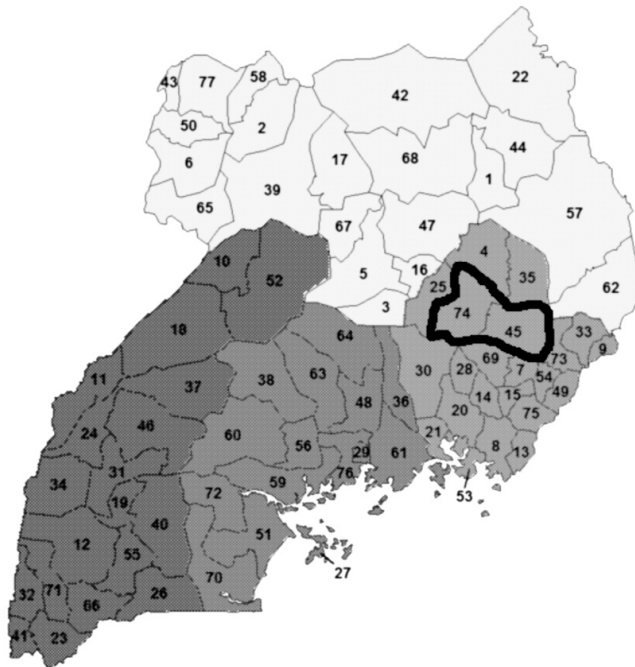
Technical Officer, Bank of Uganda.

Sendi Richard. Personal interview, May 7, 2009.

PhD Student in Economics, Makerere University.

Appendix

Appendix 1: Geographical Dimension of the Field Study



Source: http://en.wikipedia.org/wiki/File:Uganda_Districts.png

■: Eastern Uganda; 74: Soroti district (372 000 inhabitants); 45: Kumi district (265 500 inhabitants).

Appendix 2: Methodology and Data

Questionnaire Design:

The survey was conducted with the help of two questionnaires. The first one (questionnaire A), aimed at the chairpersons of the groups, asks for information about the general functioning of the group. The subcategories of this first questionnaire were: general functioning; meetings; allocation of funds; governance; membership; use of funds; default of payment; emergencies.

The second questionnaire (questionnaire B) was aimed at the group members themselves. It contained two sections: a first section asking for personal information, and a second section focusing on the member's perceptions and motivations. The first section contained the following topics: socio-demographic characteristics; income related information; financial institutions related information; information about the group membership. The second section dealt with the following issues: joining and leaving of the group; attendance of meetings and atmosphere during the meetings; use of the money; satisfaction with attributed ranks; relationship with other group members; gains from the group membership; advantages / problems / comparison to formal sector; solidarity. Supplementary material was collected through semi-structured interviews with different experts on saving groups and the financial sector in Uganda.

Characteristics of the Database:

The survey does not pretend to be representative for all Roscas in Uganda, but rather tries to give a detailed example of Roscas in one particular region in Uganda. We still tried to make the survey as representative as possible by using village and town data, questioning members of purely female and mixed groups and including literate and illiterate members in the study.

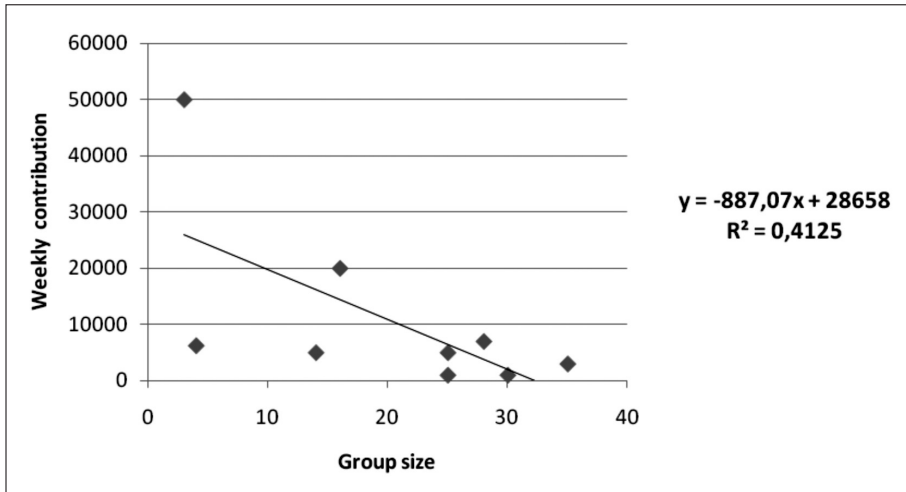
Table 1: Sociodemographic characteristics

measures in %	Sample	Uganda	Reference Uganda
Female:	66.30	51.28	<i>Census 2002</i>
Catholics:	59.78	41.9	<i>Census 2002</i>
Protestants	36.96	35.9	<i>Census 2002</i>
Literate:	75	68	<i>Census 2002</i>
Farmer:	64.12	71	<i>Census 2002</i>
House owner:	74.16	78.50	<i>Census 2002</i>
Rural population:	54.35	87	<i>Census 2002</i>
<i>average values</i>			
Years in school:	8.38	10	<i>CIA Worldfactbook</i>
<i>median value</i>			
Age:	36	15.6	<i>Census 2002</i>

A comparison of the socio-economic characteristic of our sample with the Ugandan averages shows that in many respects, our data are not far from the Ugandan ones (Table 1). The female population is slightly overrepresented in our sample (66.30% against 51.8%), which can, however be explained by the fact that Roscas are more popular with women than with men (Dfid, 2007). The median age of our sample is, moreover, far above the median age of the Ugandan population (36 years against 15.6 years (UBOS, 2002)). Here again, this is due to the nature of the survey topic, as Roscas are usually joined by adults who make their own living. The higher age average can also explain for the lower level of education of our sample, expressed in school years (average of 8.38 years against 10 years). As Universal Primary Education, which rendered Primary School free for everybody, and was accompanied by extensive campaigns promoting education, was only introduced in 1996, the education level of the under 20s is much higher than that of older people. As most people in our sample are above 20 (96.74%), it is thus not surprising that the average number of years spent at school of our sample is inferior to the average number of school years of the entire Ugandan population. Literacy in our sample is slightly higher than for Uganda (75% against 68%), which might seem contradictory to our previous explanations. As a matter of fact, the above mentioned constraints introduced a positive bias for literate group members as they could answer the questionnaires more quickly and without the help of a personal translator. It is for the same reason that the rural population is underrepresented in our sample compared to the entire Ugandan population (54.35% against 87%). Rural groups are more difficult to contact, more difficult to physically reach, and to communicate with. As in Uganda in general, Catholics represent the most important religious denomination of our sample, followed by Protestants. Also, a majority of the people questioned are farmers (64.12%), as it is the case for the country as a whole (71%).

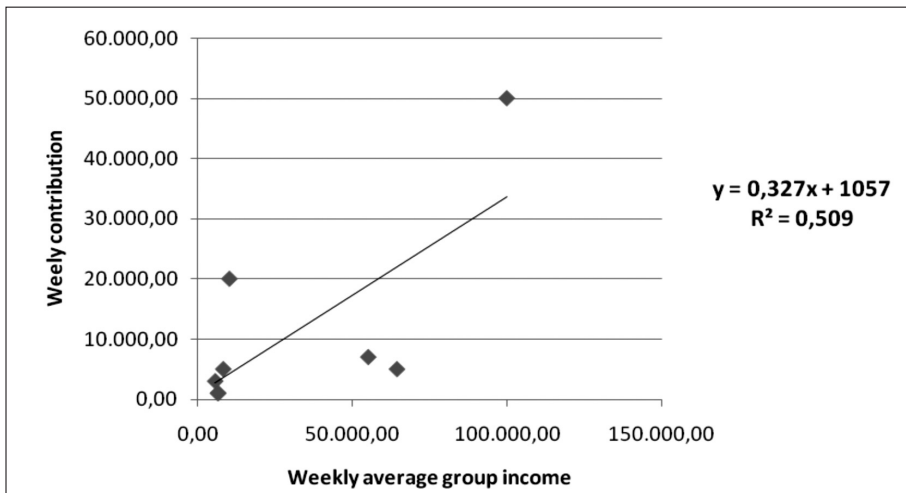
Appendix 3: Correlation between Group Size and Level of Contributions

Graphic 1:



Appendix 4: Correlation between Average Group Income and Level of Contributions

Graphic 2:



Appendix 5: Mathematical Demonstration for “Protection Against Inflation”:

Demonstration for

$$\frac{p}{N} \times \sum_{i=0}^{N-1} (1-d)^i > p (1-d)^{N-1}$$

For $d \in [0,1]$ and $N > 2$

$$\frac{p}{N} \times \sum_{i=0}^{N-1} (1-d)^i > p (1-d)^{N-1}$$

$$1 - d = \alpha \quad \alpha \in [0,1]$$

$$\Leftrightarrow \frac{p}{N} \times \sum_{i=0}^{N-1} \alpha^i > p \alpha^{N-1}$$

$$\Leftrightarrow \sum_{i=0}^{N-1} \alpha^i > N \alpha^{N-1}$$

$$\Leftrightarrow \sum_{i=0}^{N-1} \frac{\alpha^i}{\alpha^{N-1}} > N$$

$$\frac{\alpha^i}{\alpha^{N-1}} > 1 \quad \frac{\alpha^i}{\alpha^{N-1}} = \beta_i + 1 \quad \beta_i > 1$$

for every $i < N-1$ **but** $\frac{\alpha^i}{\alpha^{N-1}} = 1$ for $i = N-1$

$$\Leftrightarrow \sum_{i=0}^{N-1} \beta_i + 1 > N$$

$$\Leftrightarrow \sum_{i=0}^{N-1} \beta_i + \sum_{i=0}^{N-1} 1 > N$$

$$\Leftrightarrow \sum_{i=0}^{N-1} \beta^i + N > N$$
$$\Leftrightarrow \sum_{i=0}^{N-1} \beta^i > 0 \quad QED$$

Résumé

Cet article examine les motivations à participer à des associations d'épargne et de crédit rotatif (AECR), ou tontines. La confrontation d'hypothèses économiques et sociales aux résultats empiriques d'une enquête de terrain en Ouganda montre que, en présence d'un secteur financier formel peu développé, les tontines de notre échantillon sont économiquement rationnelles. Il apparaît également que la plus-value sociale joue un rôle important dans l'efficacité des tontines et dans la motivation de leurs membres. L'intérêt des tontines semble résider dans la combinaison de la rationalité économique et de la plus-value sociale. Les deux sont positivement corrélées.

Mots clés: Rotating Savings and Credit Association (Rosca), groupes d'épargne, rationalité économique, valeur sociale, Ouganda, Afrique de l'Est.