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An Anatomy of the Small: A Study of Rotating Saving Credit Associations in Delhi Villages

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ABSTRACT

In this paper, we examine a particular form of informal financial institution, the Rotating Saving Credit Association (ROSCA), more popularly known as Kameti, Kuri, Chitty, Chit funds, Vishi, Bishi, Nidhi in different parts of India. A rosca is a revolving financial scheme where a group of individuals comes together to borrow and invest funds. In a developing country like India, Rosca serves as an important informal institution for people who either do not have access to the formal sector or are beleaguered by its insurmountable formalities, or find roscas more attractive options from an investment point of view. Working with a sample of 36 completed discount bidding roscas from two villages in Delhi involving 450 rosca participants, we provide a thorough examination of issues relating to roscas. The importance of this study may be viewed in the context of efforts of the present regime towards financial inclusion and greater formalization of the financial sector, in particular, the advancement of the Pradhan Mantri Jan Dhan Yojana (PMJDY).

KEYWORDS: *rotating saving credit association, informal credit markets, bidding rosca, returns*

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1. INTRODUCTION

Most developing and less developed countries face a somewhat of a duality in the financial sector of their economies. On the one hand, there operates a modern innovative formal financial sector comprising commercial banks, insurance companies, non-banking financial companies, co-operatives, pension funds, mutual funds and other smaller financial entities, on the other, there continue to exist rudimentary informal institutions like moneylenders, saving credit associations and other informal groups. Admitting this form of coexistence of institutions, the governments and reserve banks in these countries have been devising policies and schemes to increasingly bring its entire populace under the fold of formalized financing. The reason is easy to muster which is that the macroeconomic instruments of policy-making fail to work as effectively as advocated by theory in the presence of such "curb" markets.

Having said that, it is important to investigate into the functioning of the informal financial sector and understand why and how it continues to thrive even after decades of regulation and efforts towards financial inclusion. The problem seems two-fold: one, as is often argued, the formal financial sector in developing countries find it difficult to mobilize savings especially among poor less educated households and second, they fear or are hesitant to grant credit to those who transact in the informal financial sector owing to the relatively smaller size of operations and the presence of informational asymmetries. As Stiglitz puts it, lenders face problems of screening, incentive and enforcement (Stiglitz, 1990). It is not that these problems bother only the formal institutional lenders and not the informal lenders, but the magnitude of the problem varies. Besides, informal lenders tend to be at an advantage as they have better access to information about borrowers, both prospective and actual and therefore are in a relatively better position to enforce credit contracts.

While it is not possible for us to study here all institution falling under the ambit of informal finance, through this paper we do propose to offer insights into a unique kind of an informal financial institution which is the rotating saving credit association, or rosca. Roscas are essentially revolving financial schemes where groups of individuals come together to borrow and invest funds. They are known by different names in different countries like “Pasanakus” in Bolivia, “Partners” in Jamaica, “Stockvels” in South Africa, “Kut” in Malaysia, “Dhikuti” in Nepal etc. and even by different names in the same country as in the case of India where they are known as “Kameti” in the North, “Kuri” and “Chitty” in the South, “Vishi” or “Bishi” in the West.

2. The mechanics of roscas

As stated in Choudhary (2017), a rosca is a group-based, revolving financial scheme in which a group of individuals come together at regular intervals and make a fixed contribution to a pre-determined pool of funds called “pot”. At each meeting one of the members receives the collected pot. Once a member receives a pot she becomes ineligible to receive another one. The rosca ends once each member of the group has received exactly one pot. The allocation mechanism in roscas can be either through lottery (Random Rosca) or bidding (Bidding Rosca) or in some pre-determined fixed order based on seniority (Fixed Rosca) etc.

The present study deals with discount bidding roscas. In a discount bidding rosca, participants bid for the rosca pot. The bid is the amount of discount that the member is willing to offer to other members of the rosca in terms of a reduction she is willing to accept in the total amount of rosca pot that she would get upon winning. The person offering the highest discount wins the pot in that particular round. The winning bid or the discount is equally distributed among all rosca members in the form of a dividend. The frequency of meetings could be daily, weekly or monthly as agreed upon by members. The duration of the rosca is determined by the number of participants in a rosca. A rosca cycle is completed when each member of the rosca has received her pot.

The rules guiding informal roscas like amount of periodic contribution, frequency of meetings, duration, membership, bid increment, reserve price etc. are unwritten and mutually consented upon by members. The basis of formation of a rosca group is usually kinship and/or proximity. Its genesis is rooted in social networks. So, social sanctions are effective in these settings where roscas operate which minimizes chances of strategic default by any member, thereby safeguarding the hard earned money of the rosca group.

A bidding rosca is a unique financial instrument as it combines the features of both an investment instrument as well as a credit instrument. Different people join rosca with different motivations. While some join rosca to borrow, others join rosca to lend and earn interest on their savings. More precisely, a rosca is a zero-sum game. While those who pick up pots can be regarded as borrowers, those getting pots in the later rounds are savers (we provide a more formal exposition of this elsewhere). Savers” returns in a rosca depend upon what borrowers pay on their borrowings from rosca. The rosca organizer receives the full amount of the rosca pot either in the first or the second round without any bidding. Another point to note is that random and fixed roscas usually will not yield internal returns as they generally involve distribution of the full amount of the rosca fund accumulated by the group. Some variants of returns in such roscas have been analyzed by Campbell and Ahn (1962) and Janelli and Yim (1988).

3. Literature Review

Geertz (1962) and Ardener (1964) throw light on different variants of roscas existing in different parts of the world. Other early work on roscas includes Anderson (1966), Bouman (1977) and Kurtz (1978). The interest of economists in roscas developed in the early 1990s with the work of Besley, Coate and Loury (1993). Using a theoretical model, Besley, Coate and Loury (1993) showed that individuals participate in rosca because rosca enables them to buy an indivisible durable good earlier than if they were to save on their own. This came to be known as the early-pot motive or the durable goods hypothesis. Thereafter, Calomiris and Rajaraman (1998) argued that not all people joined rosca for buying durable goods. They highlighted the existence of bidding roscas as evidence of this and suggested that a more important insurance role is provided by roscas, particularly amidst the poor in developing countries. They considered the case of a bidding rosca operating in the city of Mumbai. Aliber (2001) explored the possibility of people joining rosca to overcome their self-control problems. He argued that individuals are time-inconsistent and find it difficult to save alone. Rosca serves as effective saving-commitment arrangement by way of which individuals can save and restrict themselves from unnecessary spending. This has been confirmed by several other studies like Gugerty (2007), Peterlechner (2009), Dagnelie and Boucher (2012). In fact, theoretical work by Ambec and Treich (2007) and Basu (2011) also shows that roscas are pareto-efficient saving-commitment devices.

The other interesting motive for joining rosca, particularly among females, is outlined by Anderson and Balland (2002) in the form of intra-household conflict motive. The authors examine rosca participation in a household decision framework. They show that in view of weaker bargaining power of a woman in a household but greater desire to save for household needs, rosca provides a safe avenue to the woman to park money and keep it beyond the reach of her husband who has a greater desire for immediate consumption. They conclude that participation in rosca improves the well-being of the household by increasing the overall household savings. Anderson and Balland (2002) confirm the presence of this motivation among women participating in random roscas in slums of Nairobi. However, most studies do not find favor for this as the primary motive for joining roscas. Examples are Gugerty (2007) and Peterlechner (2009). In fact, using data from a field study in Benin, Dagnelie and Boucher (2012) dismiss this motivation by claiming that rosca participation is part of an individual wealth maximization mechanism rather than a household saving enhancing strategy.

We find that much of the empirical literature on roscas deals with the question of participation in roscas and the type of roscas: random, fixed and bidding. Some important studies in this regard are Besley and Levenson (1996), Anderson, Balland and Moene (2009), Dagnelie and Boucher (2005) and Tanaka and Nguyen (2009). Besides, there is a strand in rosca literature that peeps into the question of survival and sustainability of roscas, specifically random and fixed roscas. Major theoretical work on this is by Basu (2011) and Anderson, Balland and Moene (2003). Empirical studies on these are few: Handa and Kirton (1999), Anderson, Balland and Moene (2003) and Dagnelie (2007). The first one relates to banker roscas in Jamaica, the second one studies this in the context of random and fixed roscas while the last dwells on banker versus committee-run roscas. Most other studies are descriptive studies explaining functioning of roscas in specific context and regions like Adams and de Sohonero (1989), Kirton (1996), Ghazali (2003), Rogers (2006) etc. There are only a countable number of studies that examine bidding behavior in roscas like Besley, Coate and Loury (1993), Kovsted and Lyk-Jensen (1999) and Klonner (2003). Klonner (2008) studies the impact of interdependent preferences, that is, altruism on over-bidding in roscas.

We find that the literature on rocas has not kept pace with the growth in literature on other subjects. Thereis certain lop-sidedness in the number of empirical studies on roscas vis-à-vis theoretical ones. Moreover, studies dealing with issues related to bidding roscas are few both on theoretical side as well as empirical. In the Indian context, studies on roscas are far and few. A very early account of roscas is by Nayar (1973). It is an exploratory study on Chit funds which are the formal roscas. Taking further the work on insurance role of roscas by Calorimis and Rajaraman (1998), Klonner (2001) must be credited for substantial empirical work on formal as well as informal roscas. Other works on formal roscas include an IFMR study by Rao (2007) and Eeckhout and Munshi (2010). The focus of our study is to fill certain gaps in the rosca literature, particularly in relation to informal roscas operating in the northern parts of the country.

It is astonishing is to see an informal financial institution like rosca flourish in the heart of the capital of India. As per RBI branch banking statistics, there are 3857 functioning offices of commercial banks in Delhi as on quarter ending June 2018 giving a per sq. km availability of 2.59 commercial bank branches, compared to the national average of 0.045 commercial bank branches per sq. km. The argument of inaccessibility in terms of non-proximity of formal institutions can therefore not be accorded for the presence of informal institutions such as roscas in Delhi. Thus, issues related to existence and sustenance of this informal financial institution in the metropolis merit a more thorough investigation.

4. Data and methodology

The data for this study is based upon a primary survey of informal roscas operating in two villages in the Union Territory of Delhi conducted in 2013-14. Delhi has 369 villages which are categorized either as urban or rural. According to the Delhi government records as on the date of survey, 135 of these 369 villages were urbanized. The survey villages were selected through purposive sampling, based on availability of informants and willingness to participate in the survey. One of the sample villages is a rural village located in North Delhi, while the other is an urban village located in South Delhi.

A complete enumeration of all rosca organizers in the two villages was done. While all 12 rosca organizers from village 1 willingly participated in the survey, 4 out of 28 organizers dropped out from the survey in village 2. Informed consent of both organizers as well as members was obtained for the survey. Interview method was used for sourcing data from rosca organizers and participants.

Our sample consists of 36 most recently concluded roscas. These 36 roscas comprise 572 rounds covering 450 individuals. Data were collected at two levels: rosca level and participant level. The rosca level data contains information on denomination, duration, contribution, reserve price, bid increment, winning bid ineach round, amount of dividend and the (unwritten) rules relating to functioning of roscas. The individual level data contains information on the demographic details of the members like gender, age, education, occupation and wealth level. In addition, information was sought on current rosca participation status, the use of rosca funds, the timing of picking up the pot and the credit needs of members.

Informal roscas, popularly known as "kameti" in Delhi, are required to be registered under Section 4 of the Chit Funds Act 1982. The Act specifically prohibits the conduct of chits that do not have prior sanction and are not registered under the Act with the Registrar of Chit Funds. The Chit Funds Act 1982, Sec.2 provides the following definition of a "chit". In practice, however, most kametis operate informallyand are not registered, despite the penalty they attract for contravening the provision of mandatory registration under the Chit Funds Act 1982. The penalty includes a fine of Rs. 5,000 and possible imprisonment for up to 2 years. The rosca organizers as well as members bear full cognizance to their illegal status; but continue to operate and participate in roscas. There are no instances where such roscas were prosecuted.

5. Descriptive statistics of roscas and their participants

5.1. Rosca characteristics

Our sample comprises 36 completed roscas, i.e., those that had completed their rosca cycle. Completion ofrosca cycle is essential for computing and analyzing returns from rosca. A spectrum of denominations seems to be available to rosca participants. Table 1 provides a frequency distribution of rosca denomination in the sampled villages. The minimum denomination of rosca in the sample is Rs. 16,000 and the maximum denomination is Rs. 12 lakhs. Most popular denominations are Rs. 1 and 1.50 lacs. There are exactly 6 roscas each of these two denominations. Data clearly indicates that roscas are serving as source of small as well as large finance, which individuals could employ for investment purposes and obtain returns from prospective projects. This further suggests that these are essentially individuals who are being unserved by banks, despite the presence of banks in the vicinity (on the peripheries) of both these villages. It is even more surprising given that either the rosca members themselves or someone in their household owns a savings bank account. The reasons for such an outcome are discussed in a later section.

Table 1: Frequency Distribution of rosca denomination (pot value)

Denomination (in Rs.)	Frequency	Percentage
≤ 50,000	3	8.33
50,001 - ≤1,00,000	11	30.56
1,00,001 - ≤ 2,00,000	13	36.11
2,00,001 - ≤ 3,00,000	4	11.11
3,00,001 -≤5,00,000	2	5.56
Above 5,00,000	4	11.11
Total	36	100.00

All roscas in our sample are monthly roscas. The duration of these roscas varied from 10 to 20 months. See Table 2. Majority of roscas were of 15 months duration. Another preferred duration was 20 months. The duration also gives us information about the size of the rosca group. The organizer undertakes the primary responsibility of forming the group. Careful choice of participants is vital for smooth functioning of the rosca. It is in acknowledgement of this fact that the rosca organizer gets the privilege of taking away the full amount of the rosca pot in the initial one or two rounds only. In addition to other things, it helps him to absorb small shocks in terms of delayed payment by members. In the surveyed villages, organizers shared that strategic defaults rarely occur. Sometimes, members may delay payments but thatis mostly due to circumstances beyond their control. This can be easily verified by the organizer as well as other members because of living in proximity and/or close-knit relations.

Table 2: Duration of sample roscas

Duration	Frequency	Percentage
10	1	2.78
12	5	13.89
13	1	2.78
15	14	38.89
16	3	8.33
17	3	8.33
20	9	25.00
Total	36	100.00

Rosca as a financial instrument is catering to people belonging to very different economic classes with markedly different saving abilities. This is evident from Table 3. In our sample, monthly contributions ranged from Rs. 1,000 to Rs. 1 lac. Over 80 percent of the roscas had monthly contribution of Rs. 15,000 and less implying that these small regular savers could potentially be brought under the folds of formal banking. However, it remains to be seen why these individuals prefer saving in rosca over other formal sources like banks which are in vicinity and offer safer havens.

Table 3: Frequency Distribution of Monthly contributions in sample roscas

Contribution (in Rs.)	Frequency	Percentage
Less than 5,000	6	**16.67**
5,000-less than 10,000	11	**30.56**
10,000-less than 15,000	9	**25.00**
15,000- less than 20,000	3	**8.33**
20,000-50,000	5	**13.89**
Above 50,000	2	**5.56**
Total	36	**100.00**

Some of the bidding roscas in our sample are characterized by the presence of a reserve price called “sarkari ghaata” that ranged from 1 to 3 percent. It is the minimum bid in a particular round i.e. the level at which bidding will begin in that round. Also, it is the minimum dividend that will have to be paid to the entire group by the winner as it is the minimum discount at which a member can obtain the pot. Reserve price in a round t of a rosca of duration *n* having a periodical contribution of *S* and denomination *nS* is calculated as follows: $\tilde{R}^t = (x\% \text{ of } nS) \times (n - t + 1)$. For instance, in a Rs. 1,00,000 denomination rosca with a rosca cycle of 10 periods, given x = 1%, the reserve price in round 2 is equal to Rs. 9,000 (= (1% of Rs.1,00,000) x (10-2+1)). The reserve price in round 6 can be calculated likewise as Rs. 5,000. Thus,as rosca progresses, reserve price falls. In majority of the roscas, numbering 16, the reserve price percentage was 1 percent. If all active bidders do not bid or place bids equal to the reserve price, then the pot is allocated randomly to one of the active members at the reserve price.

5.2. Respondent Characteristics

Having glanced through the institutional features of rotating saving credit associations above, it would also be interesting to analyze the profile of rosca participants as this could offer useful insights to the formal sector for devising schemes to bring these individuals into its fold. Of the 450 rosca participants across 36 rosca organizers interviewed, around 68% were from village 1 and 32% were from village 2.

Although males and females both participate in rosca in the sampled villages, majority of rosca participants (70%) were males. The mean age of a rosca participant is around 42 years; the youngest member being 19 years old and the oldest being 80 years old. We came to know of instances where parents have made their adult children join rosca to inculcate saving habits in them. Nearly 70% of the members fall in the age group of 30-50 years, which is to be expected, since it coincides with the time period when an individual build up assets for his or her independent household.

Table 4: Age Distribution of roscas participants

Age (in years)	Frequency	Percentage
Less than equal to 20	7	1.6
21-30	49	10.9
31-40	152	33.8
41-50	155	34.4
51-60	68	15.1
61-70	18	4.0
70 & above	1	0.2
Total	450	100

Examining the occupational profile of roscas participants in Table 5, we find that more than 40% of rosca membership is held by businessmen and self-employed persons, followed by persons in private job (13%) and next by those in government job (9%). There are differences by village: while in village 1, most rosca members are either self-employed or into business, rosca membership is spread uniformly among different occupational categories in village 2. Housewives form a large proportion of rosca participants, roughly one-fourth. This provides evidence of the support that women provide in achieving overall household saving goals.

Table 5: Occupational Distribution of roscas participants

Occupation	Frequency	Percentage
Landlord	24	5.33
Government job	41	9.11
Private job	60	13.33
Business	85	18.89
Self-employed	100	22.22
Retired from govt. job	7	1.56
Housewife	110	24.44
No work	13	2.89
others	10	2.22
Total	450	100

43% of rosca members saved between Rs. 5000 to Rs. 15000 per month in roscas. More than 18% saved as much as Rs. 30000-100000 monthly. Members use rosca funds for very different purposes. These generally include marriages, medical treatment, buying land and property, construction, repair and renovation of houses, buying jewellery, motor vehicles, consumer durables, paying for children"s education, repaying loans and lending. As shown in Table 6, 33% of rosca members in our sample report to have used their last rosca pot for business purposes. This is not surprising given that over 40% of the sample consists of those in business and self-employment and is suggestive of the use of rosca funds for income-generation purposes. Hevener (2006) highlights the role of roscas in tremendous growth of minority businesses in U.S. over the time period 1982-1997. It is indicated that working capital requirements of these businesses were met by roscas since these businesses generally did not meet the criteria laid by formal financial institutions for obtaining loans. The same appears to be true for our sampled households.

A gender decomposition of the rosca pot uses shows that while male participants utilize rosca pots for business, buying land, property, repair of houses and meeting marriage-related expenses, the pot is used by female participants mostly to meet regular household expenses like paying for children"s education, utility bills etc. and contribute towards marriages in the household. 73% of these females are housewives. When asked how they meet their rosca obligation, their answers resonated with the arguments put forth in Anderson and Balland (2002) that this is the petty amount they save from funds given to them to meet household expenses. Once they are part of rosca, husbands help them to meet commitment in future to avoid social sanctions. 85% of rosca participants are females in roscas with a denomination of Rs. 60,000 and less, substantiating the small savings argument above. Besides, the use of rosca pot for medical treatment denotes the type of idiosyncratic shocks mentioned by Klonner (2003, 2008) as these rosca winners suggested that this was not the intended use of the pot when they joined the rosca. It also refers to the insurance role played by this informal institution.

Table 6: Uses of last rosca pot by gender

S. No.	Uses	Females	Percentage	Males	Percentage	Total	Percentage
1	Meeting regular household expenses like paying for children"s education, utility bills etc.	31	22.79	29	9.24	60	13.33
2	Buying consumer durables, motor vehicles, jewellery etc.	14	10.29	20	6.37	34	7.56
3	Buying land and property, Construction, repair and renovation of houses	25	18.38	48	15.29	73	16.22
4	Marriage-related expenses	28	20.59	42	13.38	70	15.56
5	Medical treatment	8	5.88	7	2.23	15	3.33
6	For business	11	8.09	138	43.95	149	33.11
7	Repaying loans and lending	12	8.82	23	7.32	35	7.78
8	Others	7	5.15	7	2.23	14	3.11
	Total	136	100.00	314	100.00	450	100.00

When asked about the existence of a preferred time of picking up of rosca pot, 27 % of the respondents replied that they do not plan in advance at what time they will pick the pot. They pick the pot as and when a need arises or an opportunity comes their way. Further investigation revealed that while businessmen preferred to pick pots in the beginning for investing in their businesses, housewives preferred picking up in the end for spending on household-related expenses. 57% of respondents claimed that they planned the use of the rosca fund in advance i.e. at the time of joining the rosca, while 43% did not.

6. Comparison with other forms of investments and lending sources

Using the concept of net present discounted value, we derive internal rates of return for each member in each of the 36 roscas. As stated earlier, based on analysis of present worth functions of rosca participants, we classify them as net borrowers and net savers/lenders[1]. For a net borrower in a rosca, rosca pot can be viewed as a loan to him/her by the group which he/she repays over the length of the rosca cycle. In contrast, a net saver earns a positive return on the amount he/she saved during the lifetime of the rosca. The rate of interest for borrowers in roscas is on an average 38.72% per annum. This is much higher compared to the interest on bank loans which is about 12% per annum but is lower than the average interest rate charged by professional moneylender which is about 52% per annum (Dasgupta, 1989, Aleem 1990). In response to a question on rates of interest charged by moneylenders, survey respondents reported average rates of 2% per month, going as high as 5% per month also in some cases. For 54% of those who had ever borrowed from an outside source, borrowing from friends and relatives came at interest rates ranging from 0.5% - 2% per month suggesting the prevalence of moneylending activities similar to that of professional moneylenders even among friends and relatives. Interest rate on rosca loans is comparable and in most cases less than the rate of interest on microfinance loans that are available at rates of interest ranging from 30-70% per annum (Fernando, 2006).

Although the rate charged by banks on loans is much lower, individuals who participate in roscas usually fail to meet the eligibility criteria for a bank loan. So, in effect, the rate of interest on a loan from bank is infinite for these individuals. In such a scenario, rosca appears to provide loan to borrowers at cheaper rates. Also, as reported by members, the advantage of borrowing from rosca is that the loan, whether big or small, gets repaid by the end of the rosca cycle (12-20 months) and does not linger on as in the case of a bank loan.

On the other side, small ticket size loans are difficult to service for banks. In our sample, 20% of the members participate in roscas of denomination less than Rs. 1 lac which is suggestive of the small-sized loan requirements of these members. Small loans are hard to service by banks since the cost of loan administration is higher for such loans. Besides, banks refrain from giving consumption loans in absence of any physical collateral. We saw that nearly 43% of the rosca members in our sample utilized rosca money for consumption purposes. Thus, there appears to be a mismatch in the demand and supply of different kinds of loans.

Chit Funds could offer an alternative option. The imposition of 30 percent cap on bidding considerably brought down the rates of interest for the chit fund borrowers (Eeckhout and Munshi, 2010). However, participation in regulated roscas requires fulfillment of certain criteria like furnishing personal sureties of at least two salaried persons working with a state/ central government/ public limited company/ bank and other reputed companies, or deposits of title deeds of urban property etc. which often are difficult to comply with by the kind of people who participate in informal roscas. We must highlight that the natives of our sampled villages do not have documents that can prove their legal entitlement over their houses. The reason is that the houses in which the village people reside fall in the so-called “lal dora”. As a result, they cannot use their immovable properties as collateral.

The term “lal dora” was first used in 1908 by the land revenue department which used a red thread or lal dora for marking a boundary between the village agricultural land and the village “abadi” or inhabitation. As per Delhi Municipal Corporation Act 1957, lal dora is exempt from building bye-laws and strict construction norms and regulations. Properties built on lal dora land are not recognized by MCD and DDA. Since there is no registry available for such properties, banks do not provide home loans to owners of such properties. Furthermore, individuals residing in these properties cannot use them as collateral for any other loan too.

For the net savers, the rate of interest earned in a rosca is much higher around 23.56% per annum. It is much higher than the interest rates on deposits offered by formal financial institutions. The best rate of interest in the formal sector is offered on recurring deposits which is about 9% per annum. Parking money in equities and mutual funds is an option but equity and debt markets are more sophisticated financial instruments usually

[1] Interested readers may refer to https://www.isid.ac.in/~epu/acegd2018/papers/InduChoudhary.pdf for a detailed exposition

beyond comprehension of the kind of people who normally participate in roscas. In our sample, 80% of the rosca participants have education no more than class 12. Table 7 below provides the educational profile of rosca participants. Another significant finding from our study sample is that it is a misconception that only people with lower education levels use informal sources, graduates and above also participate in this informal institution. Indirectly, it does suggest that roscas must be serving some useful purpose for the highly educated too.

Table 7: Education Distribution of roscas participants

Last class passed	Frequency	Percentage
Class 5	29	6.44
Class 8	41	9.11
Class 10	128	28.44
Class 12	161	35.78
Diploma	6	1.33
Graduation	54	12
Post-graduation	7	1.56
Others	24	5.33
Total	450	100

Another virtue of rosca as a saving instrument is that it offers flexible saving scheme to people with different saving abilities. We observed that savings in roscas varied from Rs. 1,000 to Rs. 1 lac per month. Moreover, rosca instills a sense of saving discipline since individuals have to make contribution on a regular basis. This in part is facilitated by the fear of social sanctions and threat of future exclusion which holds credence in the setting that we study. Though there is risk for lower ranks in roscas since the (technical) possibility of earlier winners exhibiting moral hazard exists, it is partly mitigated by a careful choice of members in the group. A rosca organizer bears the maximum risk in a rosca. As outlined earlier,it is to compensate for this huge risk that rosca organizers are awarded the full amount of pot in the beginning only. Using the NPV-IRR approach for analyzing returns from rosca, we find that maximum gains accrue to the organizer in a rosca. If we suppose that the rosca organizer parks his lump sum in a fixed deposit in a bank, then the average returns of organizers from rosca are as high as 43.64% per annum. This is just a lower bound on the organizers" returns. They usually earn much more since most of them lend their rosca pots further at informal rates of 12.68-26.82% per annum (equal to 1-2% per month).

7. Discussion and Policy implications

The analysis above displays how and why rosca as a financial instrument scores reasonably well in terms of meeting the diverse needs of individuals in a homogenous group. It is probably for this reason that rosca holds relevance even today in the presence of other alternative market and non-market financial institutions and despite such aggressive campaigning of financial inclusion measures such as the Jan Dhan Yojana.

Another point of consideration is that there is an untapped potential in the form of savers and borrowers that the formal financial sector can cater to. A summation of the total denomination of all 36 roscas yields a figure of Rs. 56.48 lacs which is the amount of money in circulation in a given month in these two villages. If we take into account the total amount of money that exchanged hand in these 36 roscas, it comes out to an astonishing figure of Rs. 12.23 crore on a horizon of 10-20 months. This clearly points towards the kind of scope for operation of the formal financial sector, given that there are over 350 villages in Delhi and "kametis" or bidding roscas happen to be extremely popular in these locales.

While the findings of our study suggests presence of certain opportunities, it also echoes the challenges that exist in terms of the entitlement issues relating to property, financial literacy issues related to presence of alternative avenues and lastly effective implementation of regulation. The importance of formalization cannot be underestimated as it helps to bridge the gap between theoretical prediction and realization of economic outcomes of macroeconomic policy making which is important for effective implementation of policies. Nonetheless, resolution of issues facing the residents of villages is vital and foremost.

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