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Progressive Lending as a Dynamic Incentive Mechanism in Microfinance Group Lending Programmes: Empirical Evidence from India

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PROGRESSIVE LENDING AS A DYNAMIC INCENTIVE MECHANISM IN MICROFINANCE GROUP LENDING PROGRAMMES: EMPIRICAL EVIDENCE FROM INDIA

Naveen Kumar K* **and Veerashekharappa****

Abstract

Microfinance through joint liability or group lending has received a lot of attention recently from policy makers as well as academicians. It is playing important role in delivering financial services to the 'socially and economically excluded' poor, in general, and women, in particular. Group-lending works with various dynamic incentives. One such is the principle of progressive lending which plays vital role in sustaining the groups in the delivery of microfinance services to its members. In progressive lending, a typical borrower receives very small loan amounts initially, which increase with a good repayment record or is linked to new larger loans. This paper explores the possible theoretical and empirical relationship between progressive lending and its determinants in the joint liability lending approach. The primary survey was conducted in 10 villages covering 106 SHGs and 318 members in Karnataka, India. The results indicate that age, size, savings and repayment record of the group significantly influence progressive lending.

Introduction

Imperfect information causes many problems in the credit markets, namely, adverse selection, moral hazard and lack of enforcement of repayments. It is generally known that moral hazard coupled with the lack of collateral to be given by the poor is the key reason why credit markets fail them. The problem of moral hazard may arise when individuals engage in risk sharing in conditions under which their privately taken actions or behaviour affect the probability distribution of the outcome. These situations generally appear in a principal-agent relationship when actions taken by an agent are not pareto-optimal (Holmstrom, 1979).

The emergence of innovative joint liability lending models in microfinance is celebrated as a contractual innovation that has achieved the perceptible miracle of enabling previously unbankable or marginalised borrowers to lift themselves up by their bootstraps to create 'social collateral' to replace the missing physical collateral that excluded them from access to more traditional forms of financial services, like credit, savings, etc (Conning 2000). Thus, the emergence of innovative joint liability microfinance models in financial intermediation has created new hopes for the poor, who are otherwise unbankable in the perception of formal financial institutions.

One of the successful ways through which financial services are being provided to poor people in India is through microfinance groups (SHGs or Grameen models). These are essentially informal groups of people comprising the rural poor. The groups are organised, owned, operated and controlled by the members based on solidarity, reciprocity, common interest and pooling of resources. People from similar social background, heritage, caste or traditional occupation come together for a common cause

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to raise and manage their collective savings for the benefit of all members of the group. A microfinance group is a social design in which people participate by making themselves socially and economically accountable to each other. These group-based credit systems address the problems of screening, incentives and enforcement of repayments by incorporating the principles of joint liability and peer monitoring. A group-based lending contract effectively makes a borrower's neighbours co-obligators to loans and, in the process, mitigates problems created by information asymmetries such as *adverse selection*, *moral hazard* and *enforcement of repayments* (Morduch, 1999). Thus, in group-lending contracts the functions of screening, monitoring and enforcement of repayments are, to a large extent, transferred from the financial institutions to the members of the group. Varian (1990), Stiglitz (1990), and Besley and Coate (1995) have acknowledged several credit market failures that have been overcome through the group-based lending of microfinance programmes. The group-based lending mitigates the problem of *adverse selection* that, in turn, reduces the problem of credit rationing and brings the safe borrowers back to the credit market. Theoretical and empirical studies show that people investigate each other's behavioural integrity and creditworthiness with the help of existing social networks (through the development of social capital) to prevent irresponsible and risky borrowers from joining the group.

The group-based lending methodologies will mitigate the problem of *moral hazard*. Soon after members receive a loan, they monitor each other to make sure that every member has invested the loan in a safe project that will guarantee repayment. Members make use of their social ties to acquire information, create social sanctions and bring pressure on defaulting members. *Peer pressure* is a mechanism of group lending that can be used to mitigate *moral hazard* and *enforce* prompt repayment (Stiglitz and Weiss, 1981). In order to secure future access, members are obliged to monitor each other. The social collateral (systems) or ties constitutes a powerful device to enforce repayment by group members. The ability of the groups to impose social sanctions to make members repay their loans is an important mechanism to sustain the groups and improve the repayment performance of microfinance lending. Distributing loans through groups of borrowers is assumed to result in lower *transaction costs* for both the lender and individual borrowers. The lender's costs are minimised by dealing with the group as a whole rather than as an individual within the group. Similarly, the group is responsible for distributing loans and collecting repayments. This will lead to reduction in the transaction costs to individual borrowers. Thus, it is very clear that microfinance groups have greater potential to resolve the problems of market imperfection.

Further, one important mechanism for securing high repayment rates in microfinance programmes involves exploitation of 'dynamic incentives' by increasing the size of loans over time depending on repayment histories (Basely and Coate, 1995). Microfinance programmes typically begin by lending small amounts and then increasing the loan size upon satisfactory repayment. It is a key incentive for repayment under group lending — an assurance of a new, additional loan if the previous loan is successfully repaid. This approach is called "progressive lending" or "step lending" (Hulme and Mosley, 1996; Morduch, 1999). It is a unique feature of joint liability lending that has advantages over traditional lending methodologies. However, there is no clear empirical evidence on how the dynamic

incentives, like progressive lending, work through joint liability approaches in microfinance programmes and what are the factors that determine the dynamic incentives in group lending models?

In this context, the objective of this paper is:

(i) to explore the nature and features of progressive lending as a dynamic incentive in the Indian microfinance market;

(ii) to find the association between progressive borrowing and credit utilisation of microfinance group members and,

(iii) to examine the various factors that determine progressive lending.

This paper consists of five sections. Section One introduces the research problem and study objectives. Section Two comprises a brief review of literature on progressive lending in microfinance group lending. The third section deals with the survey design and data source used in this study. The empirical results of the study are presented in the fourth section. The final section deals with the conclusion.

Progressive Lending in Microfinance Groups: A Theoretical Review

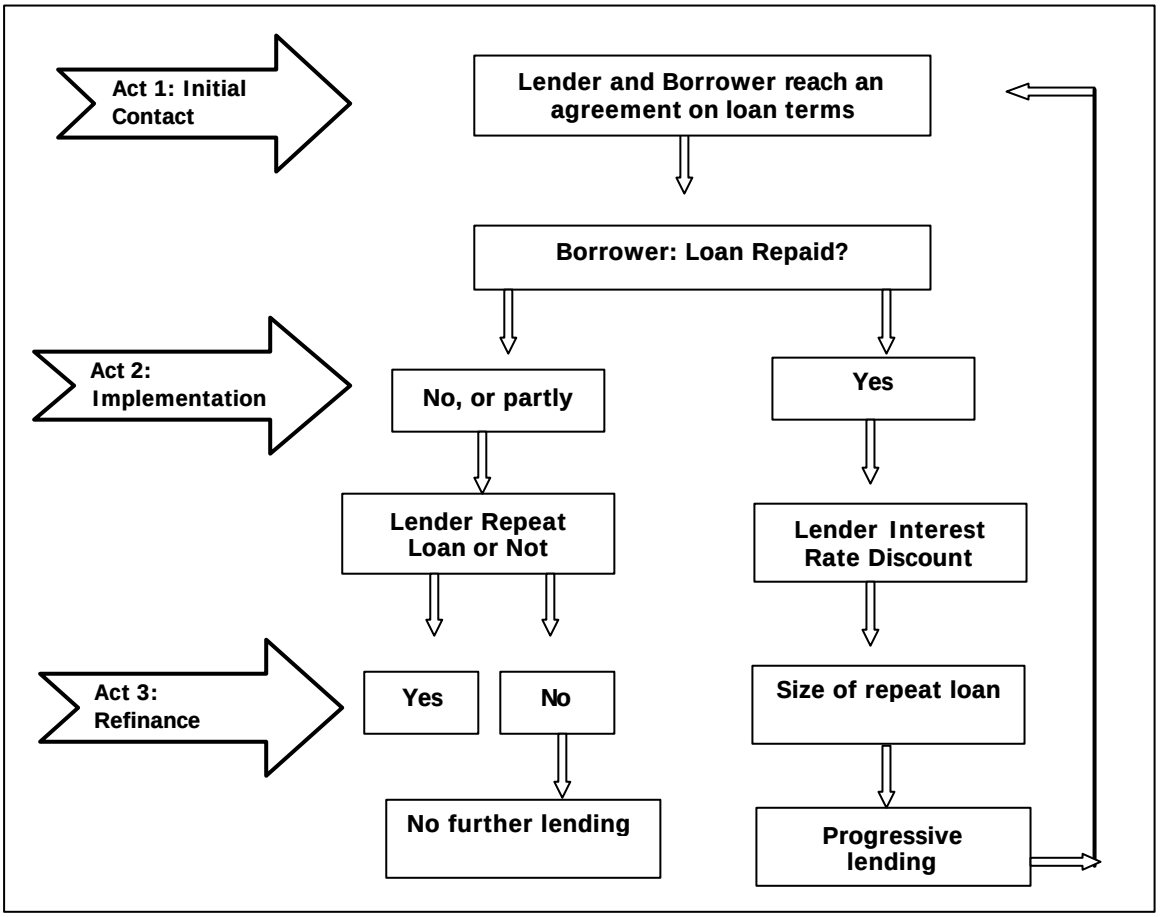
In the world of microfinance, microcredit plays a unique role in the war against poverty. It seems to have a greater and more direct impact on the beneficiaries, given that it fosters economic activities for revenue generation by using a small amount of money. The approaches used to get the guaranteed repayment probably represent the most innovative and original facet of microcredit compared to conventional credit risk mitigation policies. Hence, microcredit has had to develop by using alternative or unconventional forms of guarantees. Where to develop and transform into collateral all those intangible assets that the poorest people have: the sense of belonging to the same community and the reciprocal solidarity. Consistent with such an idea, the main risk mitigating methodologies used are joint liability or group lending and dynamic incentives.

The "discovery" of group lending opened up the promise of micro-financial services for the 'financially and socially excluded' poor, in general and women in particular. It is by far the most celebrated microfinance innovation in the world. Today, it is just one element that makes microfinance different from the traditional banking. Within group-lending many mechanisms are practiced by institutions to overcome information problems and improve efficiency. One among these mechanisms is "progressive lending". It refers to the practice of promising progressively larger loans for groups and individuals in good standing (Morduch, 1999; Armendariz and Morduch, 2005). According to Hulme and Mosley (1996:60), "progressive lending is a practice of increasing the credit limit of borrowers by a proportion dependent on their previous repayment record."

Further, Hulme and Mosley (1996) use a game theoretic approach to explain progressive lending (Figure 1). They visualise the relationship between utility maximising lender and borrower with a game in three stages which may or may not repeat themselves – initial agreement, implementation and decision on whether and on what terms to grant repeat finance. They referred these three stages as Acts 1, 2 and 3, respectively. In the first stage, Act 1, the lender gives a loan of standard size X at standard interest rate *r*. In stage two, Act 2, the borrower receives returns on the project for which the

loan is being used and repays a proportion of the loan; in the event that repayment is not made in full, the lender punishes this behaviour by refusing to provide repeat finance. In the last stage, in Act 3, borrower does not repay the loan but the lender still provides a loan because the lender's strategy of 'lending into the recipient's arrears' to pay back the arrears on the previous loan. Thus, progressive lending schemes expand the opportunity cost of non-repayment and thereby discourage strategic default even further. On the other hand, it is obvious from the figure that the successive repayment of loan will enhance the size of loan through new loan contracts between the lenders and borrowers and further increases the loan cycles. The empirical testing of factors that influence progressive lending is presented in the subsequent sections.

Figure 1: Incentive to repay and progressive lending: The game-theoretic approach



Source: Hulme and Mosley (1996:61)

Survey Design and Data

The data was derived from a survey of 106 women SHGs and 318 women members in 10 villages in the state of Karnataka, India, between 2006 and 2007. Five of the villages were supported by the Sri Kshethra Dharmasthala Rural Development Project (R.) (SKDRDP), Dharmasthala, Dakshina Kannada and the other five were supported by the Sanghamithra Rural Financial Services (SRFS), Mysore. The rationale behind the selection of SRFS is that it is the only not-for-profit MFI registered under the Indian

Companies Act, 1956, and has been working in the state for more than ten years with wide experience in microfinance services. The SRFS also extends micro-financial services in the neighbouring states of Tamil Nadu and Andhra Pradesh. However, the motivation behind the selection of SKDRDP was that it is the largest (in terms of reaching the number of poor people and loan outstanding) NGO-MFI working in the field of microfinance in Karnataka.

To study the progressive lending in groups, a multi-stage random sampling technique was used in the selection of study units (SHGs and its members). Accordingly, in the first stage, the operational area of the SRFS, Mysore district and Dakshina Kannada district, under SKDRDP were selected. The selection of the study area was based on two criteria: (i) cover (formed/linked to the MFI) the maximum number of SHGs and rural poor households and (ii) the district should be the first operational area so that we have matured groups and members for the study. The second stage of sampling was the selection of taluks. Two taluks, viz., T Narasipura and Belthangady from the SRFS and SKDRDP operational areas, were selected by using the same criteria that was used for the selection of districts. The third stage of sampling covered the selection of villages. From each taluk, the village list was prepared with number of SHGs formed/linked to the MFI. Consequently, the top five villages having the largest number of SHGs and members were selected from each taluk. Five villages from Belthangady taluk – Bandaru, Kokkada, Neriya, Machina and Padangady – and from T Narasipura taluk – Hykanoor, Helavarahundi, Talakadu, T.Bettahalli and Vatal – were selected for the study. The fourth stage of sampling involved the selection of SHGs. In each selected village, a list of currently linked SHGs with MFI was prepared. Accordingly, from each village 25 per cent of SHGs were selected randomly. In all, 106 SHGs (53 SHGs from each taluk) were randomly selected from 10 villages. From each randomly selected SHG's, 25 per cent of the member-households were selected randomly. In all, 318 households, 159 households from Belthangady and T Narasipura taluk were selected for the study. The sample of SHGs and members across MFIs/taluks and villages is presented in the Table 1.

Table 1: The Sample SHGs across MFIs, taluks and villages

Sl. No	Name of the MFI / Taluk	Name of the village	Total No. of SHGs linked to MFI	Sample SHGs selected for the study	Sample members selected for the study
1	SRFS /T Narasipura	Hykanoor	45	11(20.8)	36 (22.64)
2	-do-	Talakadu	46	11 (20.8)	33 (20.75)
3	-do-	Vatal	47	11 (20.8)	27 (16.98)
4	-do-	Helavarahundi	40	10 (18.9)	30 (18.87)
5	-do-	T Bettahalli	41	10 (18.9)	33 (20.75)
Total			**219**	**53 (100)**	**159 (100)**
6	SKDRDP/ Belthangady	Bandaru	49	12 (22.6)	30 (18.87)
7	-do-	Kokkada	45	11(20.8)	33 (20.75)
8	-do-	Machina	35	9 (17.0)	30 (18.87)
9	-do-	Neriya	42	10 (18.9)	33 (20.75)
10	-do-	Padangady	47	11 (20.8)	33 (20.75)
Total			**218**	**53 (100)**	**159 (100)**
Grand Total			**437**	**106**	**318**

Note: Figures in parentheses denote percentage to the total number of sample SHGs in particular taluk
Source: Primary Survey

Two interview schedules were prepared to collect the data from SHGs and its members. The data on basic details of the group, like, age of the SHG and its size, number of loan cycles, rate of interest, etc., were collected from the SHGs. Further, from the members, data related to occupation, level of education, marital status, caste categories, number of loan cycles, loan utilisation pattern etc., were collected. The study used a linear regression model to find out the determinants of progressive lending of the groups to its members.

Empirical Results

(a) Pattern of progressive lending: SHGs to its members

The practice of repeat loans with higher doses of credit is followed by SHGs in their group-lending thereby enticing prompt repayment. Table 2 shows that groups not only provide a series of loans but also quickly increase the size of the loans. Some groups have more than seven loans (one year per one cycle or one loan) with an increasing average of loan amount. The table shows average loan sizes for the groups in T Narasipura and Belthangady taluks. For the entire sample, the loan size grew from Rs 17,560 for first loan to Rs 1, 22,640 for sixth loan. While, the average per capita credit (PCC) accessed by the members in the total sample increased from Rs 1,802 in the first loan to Rs 12,327 in the sixth loan. Under progressive lending the group tests the borrowers with small loans initially in order to screen out the worst prospects before expanding the lending scale (Ghosh and Ray, 1997). It is apparent from the table that across the sample taluks, the average loan amount was higher in T Narasipura taluk than in Belthangady taluk. However, the average PCC up to the fifth loan was higher in Belthangady taluk. However, from the sixth loan onwards the PCC in both taluks was almost equal. Further, the average number of members who accessed credit for the entire sample, increased from 10.13 for first loan to 12.14 for sixth loan. Over the loan cycle, the groups in T Narasipura taluk served more number of members than the groups in Belthangady taluk (average number of members was 12.04 to 15.54 in T Narasipura and 8.23 to 10.29 from the first loan to the sixth, respectively). The major reason for such difference across the taluks was that the size of the groups in T Narasipura taluks was quiet large compared to that of Belthangady taluk.

Table 2: Progressive lending (Rs.) in SHGs of Karnataka

Taluk		Loan Cycle 1	Loan Cycle 2	Loan Cycle 3	Loan Cycle 4	Loan Cycle 5	Loan Cycle 6
T Narasipura	N	53	53	47	34	27	13
	Mean	18325	41407	76696	90294	89425	191638
	Minimum	3000	8000	10000	24000	9400	30000
	Maximum	80000	125000	220000	170000	225000	312800
	Std. Deviation	15958	27035	48056	42339	65805	66687
	Mean of PCC	1479	2980	5130	6449	6865	12256
Belthangady	N	53	53	53	50	45	24
	Mean	16796	49835	59380	78145	85445	85267
	Minimum	2000	710	0	13000	15	26000
	Maximum	82000	158500	216050	359010	300000	200000
	Std. Deviation	13313	37598	40788	57789	64412	44354
	Mean of PCC	2125	5011	6094	7786	9165	12399
Total	N	106	106	100	84	72	37
	Mean	17560	45621	67519	83062	86938	122640
	Minimum	2000	710	0	13000	15	26000
	Maximum	82000	158500	220000	359010	300000	312800
	Std. Deviation	14645	32863	44970	52156	64503	73413
	Mean of PCC	1802	3995	5641	7245	8302	12327

Note: PCC denotes the Per capita credit accessed by the member

Source: Primary Survey

To examine whether or not there was any significant difference in the average loan lent by groups over various loan cycles, the *paired sample T test*[1] for mean was conducted. The result is given below in Table 3.

Table 3: Test for the difference in mean across the loan cycles

Loan Cycles (Pair)	T. Narasipura		Belthangady		Total	
	Mean (`)	t-statistics	Mean (`)	t-statistics	Mean (`)	t-statistics
loan1-loan2	1500.19	7.07*	2886.54	6.51*	2193.37	8.64*
loan1-loan3	3690.56	9.70*	3968.87	7.84*	3838.07	11.95*
loan1-loan4	5287.17	9.24*	5649.92	7.88*	5503.09	11.39*
loan1-loan5	5626.01	6.09*	7290.46	8.99*	6666.29	10.80*
loan1-loan6	11158.18	8.74*	6354.29	8.08*	8042.14	10.44*

Note: *significant at 1 per cent level.

Source: Primary Survey

[1] The paired-sample t test is used to compare the means of two variables within a single group.

The paired-sample *t test* tests the hypothesis that there is no difference in the mean of loan cycles across taluks and in the entire sample. The results indicate that the t statistics are significant and the mean of loan cycles differ across the loan cycles. In fact, the observed mean difference was higher in T Narasipura taluk than in Belthangady taluk.

(b) Pattern of progressive borrowing in SHG members

The ultimate purpose of group lending in microfinance is to provide timely and continuous credit to the members. The continuity of accessing credit is dependent on the borrowers' prompt repayment of old credit. Therefore, the progressive borrowing by the members from SHGs shows the effectiveness of dynamic incentives practiced by group lending. From Table 4 it is apparent that in both the study taluks the average borrowing of the member increased from the first loan to sixth loan. The table clearly shows that SHGs are testing the member's creditworthiness with small loan amounts and over a period, the member is able to access larger amounts of credit. Further, repayment of previous loan is rewarded through the incentive of larger loan in the current period. Thus, prompt repayment of credit leads progressive lending which is a dynamic incentive for the members in microfinance lending.

Table 4: Progressive borrowing of the members

Taluk		Loan Cycle 1	Loan Cycle 2	Loan Cycle 3	Loan Cycle 4	Loan Cycle 5	Loan Cycle 6
Belthangady	N	159	159	156	146	115	63
	Mean	1634.40	5627.36	9529.04	12897.26	14039.13	15031.75
	Minimum	100	500	245	500	2000	5000
	Maximum	7000	50000	50000	75000	50000	50000
	Std. Deviation	1247.77	5643.88	7765.57	10914.70	8289.75	9187.95
T. Narasipura	N	159	159	144	102	70	34
	Mean	1590.09	4730.82	8173.61	9549.02	10271.43	10852.94
	Minimum	500	500	1000	1000	3000	2000
	Maximum	6000	15000	25000	20000	20000	20000
	Std. Deviation	1228.18	3227.43	4210.51	4308.93	4491.28	5009.88
Total	N	318	318	300	248	185	97
	Mean	1612.25	5179.09	8878.433	11520.16	12613.51	13567.01
	Minimum	100	500	245	500	2000	2000
	Maximum	7000	50000	50000	75000	50000	50000
	Std. Deviation	1236.26	4611.92	6340.36	8958.38	7314.23	8195.41

Source: Primary Survey

(c) Pattern of loan utilisation across various loan cycles

The increased loan cycle depicts the pattern of progressive lending/borrowing and also represents where the credit has been utilised and its likely returns to the investor. A borrower needs credit for

many purposes, starting from small amount of money for consumption requirements to a large amount for the productive needs. Theoretically, the initial steps in progressive borrowing will comprise small amounts generally used for consumption or emergency purposes. It is also evident from the Table that the initial loans are largely used for consumption purposes and the later ones are utilised for various income-generating activities, like dairy, petty business etc.

The empirical results from Table 5 clearly illustrates that as the loan cycles increases with larger amounts, the utilisation spreads across income-generating activities and housing purposes. It was found that poor people give more priority to the development of housing and buying housing requirements. Further, even some loan amount was invested in gold and silver jewellery as a risk barring or risk mitigating factor in the future.

(d) Determinants of progressive lending

Theories on the sequential stage of group development are based on the identification of definite phases in the life cycle of the group. According to Tuckman (1965), each group will pass distinct stages of development like, forming, storming, norming and performing. Thus, the age or the level of maturity of the group will play a dominant role in determining the progressive lending of the groups.

To test the relative importance of the factors that determine the progressive lending in groups, a log linear regression model was estimated by using the Ordinary Least Square method. We found that the semi-log functional form was better than the non-log form to estimate the determinants of progressive lending by groups. In order to justify the semi-log specification, we tested the distribution of residuals for normality. The validity of the T-test and F-test also depended upon a normal distribution. In the Normal Probability (P-P) Plot, we found that the residuals were more close to the normal probability curve in the case of semi-logarithmic specification than the non-logarithmic specification. Therefore, the results support the assumption an appropriate regress and are natural logarithm of average loan amount (total amount of loan divided by number of loan cycles considered as progressive lending) in the groups. In this model, the average loan amount in the group is the dependent variable and age, size of the group, per capita savings (PCS), per capita credit (PCC) accessed, MFI that is credit linked with groups, institutional and financial sustainability[2] of the group are the explanatory variables. A description of the independent variables and its expected signs is given in Table 6.

[2] The financial and institutional sustainability of the groups were measured through the computation of two independent indices (Shetty, 2009). These index values varies from 0 to 100, where values moving towards 100 shows that there is high financial or institutional sustainability of the groups.

Table 5: Pattern of loan utilisation across loan cycles

Particulars of Loan Utilization	Loan Cycle 1			Loan Cycle 2			Loan Cycle3			Loan Cycle 4			Loan Cycle 5			Loan Cycle 6		
	Bel	**T.N**	**Total**	**Bel**	**T.N**	**Total**	**Bel**	**T.N**	**Total**	**Bel**	**T.N**	Total	**Bel**	**T.N**	**Total**	**Bel**	**T.N**	**Total**
IGA	14 (8.81)	49 (30.82)	**63 (19.81)**	64 (40.25)	88 (55.35)	**152 (47.80)**	69 (44.23)	94 (65.28)	**163 (54.33)**	61 (41.78)	63 (61.76)	124 (50.00)	29 (25.22)	33 (47.14)	**62 (33.51)**	24 (38.10)	16 (47.06)	**40 (41.24)**
Health & Education	28 (17.61)	34 (21.38)	**62 (19.50)**	14 (8.81)	16 (10.06)	**30 (9.43)**	7 (4.49)	5 (3.47)	**12 (4.00)**	10 (6.85)	1 (0.98)	11 (4.44)	2 (2.86)	2 (1.08)	**0**	2 (3.17)	2 (5.88)	**4 (4.12)**
Repayment of old loan/s	4 (2.52)	29 (18.24)	**33 (10.38)**	4 (2.52)	9 (5.66)	**13 (4.09)**	0	2 (1.39)	**2 (0.67)**	0	0	0	1 (0.87)	0	**1 (0.54)**	0	0	**0**
Social & Religious Ceremonies	4 (2.52)	1 (0.63)	**5 (1.57)**	0	1 (0.63)	**1 (0.31)**	0	2 (1.39)	**2 (0.67)**	0	0	0	0	1 (1.43)	**1 (0.54)**	0	0	**0**
Housing	5 (3.14)	9 (5.66)	**14 (4.40)**	28 (17.61)	29 (18.24)	**57 (17.92)**	54 (34.62)	30 (20.83)	**84 (28.00)**	52 (35.62)	34 (33.33)	86 (34.68)	61 (53.04)	26 (37.14)	**87 (47.03)**	25 (39.68)	15 (44.12)	**40 (41.24)**
Jewellery	1 (0.63)	0	**1 (0.31)**	14 (8.81)	3 (1.89)	**17 (5.35)**	9 (5.77)	6 (4.17)	**15 (5.00)**	11 (7.53)	3 (2.94)	14 (5.65)	16 (13.91)	3 (4.29)	**19 (10.27)**	10 (15.87)	1 (2.94)	**11 (11.34)**
Consumption	103 (64.78)	37 (23.27)	**140 (44.03)**	35 (22.01)	13 (8.18)	**48 (15.09)**	17 (10.89)	5 (3.47)	**22 (7.33)**	12 (8.21)	1 (0.98)	13 (5.24)	8 (6.96)	5 (7.14)	**13 (7.03)**	2 (3.17)	0 0	**2 (2.06)**
Total	159 (100)	159 (100)	318 (100)	159 (100)	159 (100)	318 (100)	156 (100)	144 (100)	300 (100)	146 (100)	102 (100)	248 (100)	115 (100)	70 (100)	185 (100)	63 (100)	34 (100)	97 (100)

Note: *(i) Bel = Belthangady taluk and T.N = T. Narasipura taluk (ii) the figures in parenthesis represents percentage to the total number of observation in particular categories of loan utilisation..*

Source: Primary Survey

Table 6: Description of Independent Variables

Variable	Description	Expected Sign
mfi	1 = SKDRDP; 0 otherwise	+
finsus	Financial sustainability of the group	+
inssus	Institutional sustainability of the group	+
age2	1= SHG having age of 3 to 6 years, 0 otherwise	+
age3	1= SHG having age of more than 6 years, 0 otherwise	+
size2	1= group size between 10 to 15 members, 0 otherwise	+
size3	1= group size more than 15 members, 0 otherwise	+
lnpcc	Log per capita credit accessed (`)	+
lnpcs	Log per capita savings (`)	+

In analysing the determinants of progressive lending of SHGs, the age of the group is considered as an explanatory variable. The SHGs that exist for a long period with continued savings, make the group increase its cycle or size of loans. It is expected that compared with the age1 group, age 2 and age 3 groups are likely to positively influence progressive lending by the SHGs. The PCC accessed by the member is considered as an explanatory variable in the model. It explains the reliability of SHGs in delivering credit services to the members in a more convinced manner. Thus, benefits to the members will keep the SHG alive and sustainable. It is expected that the per capita credit accessed by the member will positively influence the progressive lending of the SHGs. Generally, the microfinance groups depend on MFIs for their financial requirements. Thus, the MFI plays an important role in the availability of credit. Group size is considered as an explanatory variable. Most of the theoretical literature on group lending suggests that the group, which is too large or too small in size, may fail to increase the size of loans. If the group is too big then the peer pressure and monitoring will be very weak due to information asymmetries and if it is extremely small then there may be failure of 'economies of scale' in its operation. Thus, in this model as compared to Group1 (less than 10 members), Group 2 (10 to 15 members) and Group 3 (more than 15 members and less than 20) are likely to positively influence the progressive lending of the SHGs. The variables on financial and institutional sustainability are the *index values* that are computed by considering various financial factors and institutional factors, like leadership, meetings and decision-making, mechanisms of record keeping, conflicts-resolving capacity of the groups, networks and awareness, thrift and saving, borrowing and lending, credit rotation, and repayment of loans.

The estimated equation is as follows.

$$\boldsymbol{prolnd} = b_1 + b_2\boldsymbol{mfi} + b_3\boldsymbol{insus} + b_4\boldsymbol{finsus} + b_5\boldsymbol{age2} + b_6\boldsymbol{age3} + b_7\boldsymbol{size2} + b_8\boldsymbol{size3} + b_9\boldsymbol{ln\,pcc} + b_{10}\boldsymbol{ln\,pcs} + \boldsymbol{u}$$

Table 7: Determinants of Progressive Lending: OLS Estimates

Dependent variable = Progressive lending (prolnd)

Variables	Co-efficient	Robust std. error	t-Statistics
mfi	0.0795	0.0721	1.10
inssus	0.5059*	0.1817	2.78
finsus	0.8419*	0.25055	3.36
age2	0.1704**	0.9213	1.85
age3	0.3085**	0.1541	2.00
size2	0.2071*	0.0658	3.14
size3	0.5739*	0.1055	3.44
lnpcc	0.4216*	0.1481	2.85
lnpcs	0.6741*	0.0840	3.02
constant	7.3036*	1.000	2.30
R^2	0.61		
F (9, 96)	23.5*		
N	106		

Note: *, **, *** Significant at 1, 5 and 10 per cent level, respectively.

The result indicates that there is positive association between the age of the SHGs and progressive lending. SHGs falling in age group2 observed bigger loan sizes by 0.1704 units compared to SHGs falling in age group1. Similarly, age 3 group attained larger loan sizes by 0.3085 units compared to SHGs in the age group1. The coefficients of age 2 and age 3 groups are positive and statistically significant at 95 per cent. The coefficients of log of per capita savings and log per capita credit accessed by the group member are positive and significant at 99 per cent. The size of the SHGs is positively associated with the loan size. While comparing the smallest group (size 1), the progressive lending of size2 is comparatively higher at 0.2071 units and further, for the size 3 it is still higher by 0.5739 units. Size2 and size3 are statistically significant at 99 per cent. Institutional sustainability and financial sustainability of the groups have more influence on the progressive lending of the SHGs and it is significant at 99 per cent. As the groups attain higher levels of sustainability, it will influence the number of loan cycles and amount of loan. The R-square value is 0.61, which means 61 per cent of the variations in progressive lending of the SHGs was explained by the included variables in the model.

Policy Recommendations and Conclusion

In the recent past, in Karnataka, new institutions, namely, SHGs have been recognised and accepted as financial intermediaries. The empirical result in this study reveals that the groups increased their loans many fold and that they are following dynamic incentives like progressive lending. Groups in Belthangady taluk are lending more than the groups in T Narasipura taluk with regard to average PCC. The average increase in the credit over the years is greater in T Narasipura taluk than in Belthangady

taluk. It indicates that the practice of progressive lending has contributed in improving the loan size across the groups and taluks.

The supply of financial services through the SHGs to the poor is found to be efficient and sustainable. It has bridged the gap between the relatively low cost but inaccessible formal banking sector and the accessible but high cost informal sector. However, this study has investigated the influence of sustainability and other factors in determining progressive lending by the groups in Karnataka. The results show that the age of the group, savings and credit access, institutional and financial sustainability of the SHGs are the major determinants of progressive lending by the microfinance groups. The empirical findings of this paper establish that the groups with high institutional and financial sustainability will increase progressive lending and further increase the sustainability of the groups.

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