Does microfinance elevate poverty? Does family size matter in the provision of microcredit? Evidence from a randomised evaluation

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Abstract

This paper looks at randomised assessment of microcredit intervention through Spandana in Hyderabad, India. It looks at households with six or more than six members as a restricting conditioning to see whether provision of microcredit affects them differently. This paper finds significant differences in the way which smaller and bigger families allocate their additional resource received in the form of microcredit intervention. As stated above, bigger households spend more on durable goods as soon as they received a loan whereas smaller households do not emphasis on increasing household stocks. These results are revealing on how different households prioritise their expenditure categories and thus may serve as a guide to microcredit institutions on how to provide tailored credit packages. Likewise, intuitively bigger households[1] had higher borrowing levels compared to smaller households[2]. Furthermore, this paper concludes that smaller households increase their borrowing from banks and informal sources as well. The reasons behind this contrast maybe due to unconsidered factors in this study such as existing family businesses, household preferences or loan provider criteria.

Keywords: microfinance, microcredit, poverty elevation, family size

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[1] The term bigger households refers to households with six or more than six members for the rest of this paper.
[2] Likewise, the term smaller households refers to households with five or less than five members.

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1. Introduction

An extensive number of studies have been carried out on the topic of microfinance and microcredit. Social impact researchers have been interested in this area because of its potential to develop our understanding of how the poverty is reduced. Grameen Bank pushed these concepts and group-lending model to the spotlight. Mohammad Yunus, the founder of Grameen Bank was awarded Peace Nobel Prize in 2006, for his "efforts in eradicating poverty from below". Similar developments took place in majority of the developing economies around the world such as Banco Sol of Bolivia, BRI of Indonesia and Spandana in Hyderabad in India. It attracted many researchers and since then an extensive amount of studies have been carried out on how the provision of microloans and microcredit may help poorer households. Prior to these developments in the field of microfinance, poor households have always had their informal methods of conducting transactions and accessing credit. The most common practice among poor households were perhaps borrowing money from a relatively richer relatives in the village at a mutually agreed interest rate. The risk of such informal practices were that the interest rate would be set at the lender's discretion. These richer households in very informal sense acted as lender institutions to many poor households. Their debt recollection methods were harsh and brutal sometimes, in the case when poor households didn't return the loan on time.

The bedrock for microfinance and microcredit practices have been developing countries with some sort of rural communities. Majority of the institutions that tried to provide credit to the poor were doomed to failure because of low repayment levels, in other words, the running of such institutions were not cost-effective. Thus, default rates were the issue of limited liability. Group lending model as a prominent practice in providing credit to the poor households, uses social ties and networks to make debt recollection possible

(Murdoch, 1999). Since this development in the 1970s, localised variations of the model is used around the world to create a feasible credit market for the poor. These institutions are involved in a number of activities, which is summarised below: small loans to businesses or individuals, collateral substitutes such as group guarantees or compulsory saving accounts. These activities are designed to solve the issues of limited liability, adverse selection and so on, which will be discussed in the next chapter. If repayments are smooth, access to further larger loans and carrying out some sort of assessment on investments or borrowers.

The major challenge to microfinance institutions (MFIs) since the 1970s, like their predecessors, is being financially sustainable. These institutions has two contradictory objectives: to reach the poorest families while maintaining financial sustainability. The trade-off between the two objectives is the challenge for institutions that will end up not having enough revenues to cover their costs. At the moment, without the government subsidies these institutions will not be able to cover their capital costs. Many researchers such as Ledgerwood (1999) and Murdoch (2000) admit that the sheer growth in the size of the industry since the start of the millennia however, has been phenomenal.

This paper provides a critical analysis of how microfinance enables provision of microcredit to the poor. In order to do that, it mainly focuses on the group-lending model with reference to a few other frameworks. It explores the challenges such as adverse selection and moral hazard that formal institutions face when providing a loan to the poor households. It further explains how the advent of models such as group-lending has tackled those challenges. The paper uses data from a for profit microfinance institution based in India to disentangle whether provision of microcredit to poor households raises their welfare. To be more specific, this paper will look at randomised results for bigger household sizes with six or more than six members. There are two reasons behind this motivation, first, bigger households are a common feature of poorer communities, and provision of microcredit

mostly takes place in these communities. Second, bigger households may behave differently to smaller households, they may vary in their allocation of financial resources on consumption or expenditure to that of smaller households. Therefore, it is plausible to examine microcredit's effects conditioned to household size specifically. Welfare is an ambiguous concept and one of the main challenges in this paper will be choosing proxy variables to study household's welfare. Section two in this paper reviews existing literature on the topic. Section three constitutes the theoretical framework. Section four explains the dataset and the methodology, section five is data analysis and presents the results obtained. Section six draws conclusions based upon the results and provides some insight into whether microfinance is an importance tool to combat poverty or not.

2. Literature Review

There has been a sharp growth in the number of microfinance clients, from 7.6 million to 137.5 million announced by the Microfinance Summit Campaign in 2012. It has fostered a great deal of hope for proponents of the industry who claim it's the "miracle" to poverty alleviation. There are a number definitions for microfinance but the simplest that captures the essence is by Schreiner and Colombet (2001); "the attempt to improve access to small deposits and small loans for poor households neglected by banks" (p.339).

Group lending takes much of the discussion when economists try to explain the way in which microfinance institutions operate. This is usually a self-selected group of individuals who sign the loan contract jointly and take the collective responsibility to repay the debt even if a member defaults, this is referred to as joint liability. Initiated by the Grameen Bank in Bangladesh; BankSol of Bolivia, BRI of Indonesia, and majority of other microfinance institutions (MFIs) practice a variant of joint liability concept.

Group lending is an alternative method to second-best individual lending contracts. It uses borrower's "social assets" (See Berenbach & Guzman, 1994, Murdoch, 1999, and Ledgerwood, Earne & Nelson, 2013) to act as collateral. Both group lending and other similar models such as a village bank (See Holt, 1994) or Rosca style institutions (See Besley, Coate & Loury, 1993) have developed in a situation when people are excluded from the formal credit market.

Generally, the motivation behind Rosca-style institutions is to allow relatives to form a group in order to acquire one off lump sum loan (See Harper, 2002). These types of institutions are considered inferior to both group lending and credit markets (See Besley et al, 1993) that is because they do not result in allocative efficiency. Group lending is more sophisticated invention in microfinance context; it has enabled the expansion of access to credit by lowering transaction costs and mitigating information asymmetries (See Angelucci, Karlan & Zinman, 2013, and Ghatak & Guinnane, 1999).

In order to understand how Grameen-style group lending mitigates information asymmetries and lowers cost of borrowing, we ought to discuss the following key concepts.

2.1 Adverse Selection

It refers to the problem when banks lack information on how risky their borrowers are (See Armendariz & Murdoch, 2010:42). This is considered as an imperfection in the credit market because it indirectly signals banks to set interest rates too high. Higher interest rates may drive safe borrowers out of the credit market. In order to fill this lack of information microfinance presents itself as a solution (See Armendariz & Murdoch, 2010:48).

2.2 Moral Hazard

This is the case when banks do not know what borrowers do with the credit (See Armendariz & Murdoch, 2010:48). Therefore, banks do not realise if borrowers are

hardworking individuals, the type of project they undertake with the fund and so on. Ex-post moral hazard refers to the problems that may arise after the disbursement of the loan and investments i.e. if the borrowers run away with the loan. As explained by Armanderiz and Murdoch (2010) both adverse selection and moral hazard arise from "information asymmetries" (p.58) and both of the above issues could be solved if borrowers had a collateral. Collaterals are offered to banks or lenders in order to secure a loan. If the borrower is unable to repay the borrowed amount, the bank or the lender can seize the collateral in order to recoup the amount. This sense of security allows the banks/lenders to issue loans, thus, the adverse selection and moral hazard problems are removed. Since poor households suffer from limited liability problem i.e. they do not have anything of value to offer as collateral, group lending practice makes microfinance appealing and has several advantages. It allows "peer selection and monitoring" "assortative matching" "effective price discriminating" and "contract enforcement" (See Wenner, 1995 and Murdoch, 1999).

2.3 More Literature

Aghion, Armendariz & Gollier (2000) further elucidate that in an adverse selection situation it is possible to end up with "inefficiently" high interest rates. Since interest rates are the cost of borrowing, this in turn will reduce the opportunities available for poorer economic agents (See Stiglitz & Weiss, 1981). Therefore both adverse selection and absence of collateral, pushes the poorer individuals and households out of the credit market and limits their access to credit.

Under group lending/joint liability dynamic incentives begin to form, if the debts are paid and a good reputation is built, the path to access further credit becomes smoother, this brings efficiency and overcomes the adverse selection problem (See Bolton and Scharfstein, 1990). Ghatak (1999) states, the very fact that borrowers have autonomy to choose their peer

results in lower costs of lending to the lender and achieves higher repayment rates. In fact, the ability to form a group of people that are willing to be held jointly liable for a loan is a form of social capital. Grootaert & Bastelaer (2001) explain two mechanisms through which social capital as a microfinance has been developed. Structural social capital which refers to pre-defined information sharing and decision making through social networks. Cognitive social capital which refers to broader norms and beliefs exist within communities which brings trust. For instance, Hossain (2013) explains that Grameen Bank model tries to build on social capital through improving its relations with its employees, then with its clients and then promoting trust between borrowers. He says the three; the bank, its employees and the clients are tied in web of trusts and norms, and it is not easy process to become an employee of the bank.

One solution to limited liability problem is the "peer group formation" (See Aghion et al, 2000), it reinstates the absence of collateral by imposing the responsibility of repaying the debt -if a member defaults- to the rest of the group. Agion et al (2000) defy the notion that urban areas have higher rate of mobility and therefore hard to mitigate the moral hazard problem. On the other hand, the downsides to a joint liability layout involves weekly repayment meetings and puts members under a lot of social pressure but the empirical evidence (See Attanasio, Augsburg, De Haas, Fitzsimons & Harmgart, 2014) suggest that it's doing a better job than the alternatives such as individual lending, in all levels.

Murdoch (1999) questioned the rhetoric of poverty alleviation through microfinance and stated that it has moved far ahead of empirical evidence. Although, the old perception that the poor do not have the capacity to save was questioned by Aportela (1999) too, where, he used data from Mexican National Survey of Income and Expenditure and showed that providing financial services to low-income households increased their saving rates by more than 5% point. However, until recent years not many empirical studies were conducted to

identify the impact of availability of microcredit to low-income households. From statistical difficulties in measuring household's utilities to lack of credible data in order to carry out inferences from, there were a wide range of paucities in this field.

The next set of papers that will be discussed show a causal link between group-lending practice by microfinance institutions, which made microcredit available and reduction in levels of poverty. These experiments were randomised, contained controlled and treatment groups.

Upon availability of microcredit, De Mel McKenzie & Woodruff (2008) showed that the average real return to capital for enterprises went up by 5% per month (55% per year). They found that both household's wealth and entrepreneurial ability had a positive impact on their results. Similarly, Karlan and Zinman (2010) found that microcredit borrowers benefited significantly from the credit that was made available by a microfinance institution for profit in a semi-competitive market in South Africa. Karlan & Zinman (2010) findings showed that making access to credit easier improved all outcomes (i.e. increased borrowed, higher income, employed, etc…) on average. But the caveat with this conclusion is that certain advantages or disadvantages may take longer to appear. De Mel et al's (2009) findings were based on a data that suffered from small sample size estimations and limited data availability. Whereas Karlan & Zinman's (2010) found it difficult to establish the counterfactual argument. Any attempt to measure the impact of credit availability on households (self-employed or otherwise) is complicated with an identification issue i.e. it becomes difficult to single out the effect of the loan that was made available to an individual or a group of self-selected borrowers.

Karlan and Zinman (2010) argued that revealed preferences dictate, making credit access easier allows marginally secluded borrowers to benefit whereas behavioural economic models say the opposite. Behaviourist's state that individual's preferences and cognitions

vary therefore, it may lead to over borrowing (See Angelucci et al, 2013). Karlan and Zinman (2010) argued that their findings from the South African market "casts doubt" on the "over borrowing" presumption that behavioural models suggest about vulnerable consumers. In a separate paper, Karlan and Zinman (2011) also tested for the effects of individual lending through credit scoring and they found that net borrowing increased in the treatment group but individuals wellbeing declined mainly due to business stress. In a similar fashion, Attanasio et al's (2014) experiment in rural Mongolia indicated no significant increase in consumption or entrepreneurship for individual loans. Both papers stated that they found no significant support for individual loans in the above contexts to show that it helps poor recipients.

However, when Attanasio et al (2014) compared the differential in the impact of group lending and individual lending; they found a positive correlation between group loans, and consumption and entrepreneurship. Attanasio (2014) also provided further evidence that households with a microenterprise who were offered a group loan realized an increase of 10 percent or more profits. This highlights the supporting evidence that under the joint liability practice borrowers are more likely to spend their loans on investment ventures, thus realizing higher rates of return. On the contrary, under individual loans, borrowers do not have the same incentive.

Both Banerjee, Duflo, Glennerster and Kinnan (2013) and Crépon, Devoto, Duflo & Parienté (2014) carried out randomised evaluation when microcredit was made available to two different places. Both papers agreed that microcredit and group lending practices are powerful financial instruments for the poor; however they are not the "miracle" to alleviate them out of poverty. Banerjee et al (2013) in villages "Bastis" of Hyderabad, India looked at the following variables: number of new businesses started after the provision of the loan, household's consumption levels, business income as well as education, health and women's empowerment. These indicators were picked in order to determine whether the microloan had

an impact on each one of them, hence providing information on whether these households were made better off. They found no influence on monthly consumption of the households, no or little impact on education, health or women's empowerment. However the findings of Banerjee et al's (2013) study indicated that the loans had stimulated a number of other things such as labour supply choices in the household, i.e. people working harder and longer hours on their own businesses. And it had changed the household's enter-temporal choices, accounting for heterogeneity in this study. Crépon et al's (2014) paper estimated the impact of taking a microloan in Morocco. They showed that the increase in self-employment activities and assets were offset by a sharp reduction in income from casual labour. The above two studies argued that microcredit may work through different channels but they do not move poor households out of poverty, at least in the short term.

The following two papers looked at the impact of availability of microcredit from different angles. Kaboski and Townsend (2011) using a structural study found that households increased both their borrowing and consumption levels almost equivalent to the value of credit expansion. However, in their conclusion, they argued that due to high interest rate costs being carried to the future, household's utilities are "saddled" and the increase in borrowing is not sufficient proxy for economic welfare. For 10% higher than the market rate, Angelucci et al (2013) studied the effect of group lending at 110% annual payment rate (APR) to crisscross the average effect of the loan on a set of broad outcomes such as credit access, creditworthiness, use of grants for business and so on. Their finding stated that microcredit loan is generally beneficial for poor households but it is not as transformative as advertised by the practitioners.

2.4 Literature Review Conclusion

Poor households do not have collateral to protect them against the credit that they would like to access through standard means; therefore, they are excluded from the credit market. Banks and credit agencies argue that problems such as limited liability, moral hazard and adverse selection doesn't allow them to make credit accessible to this segment of the market. The advent of microfinance practices namely group lending which gave rise to the idea of joint liability has provided a theoretical solution to difficulties mentioned above.

Group lending in theory allows formation of a group that has full information about each other, they vouch to pay the debt even if a member defaults and they monitor each other's activities. However, evidence from randomised experiments carried out on several microfinance institutions provide mixed results. As discussed, one set of papers showed that there was a positive link between group lending and outcome variables such as higher income, higher rates of returns, better entrepreneurship etc…. A further set of papers argued otherwise and concluded that the changes in the above variables may not necessarily translate into economic welfare. The papers showed very little or no evidence to support for individual microloans and reduction in poverty levels. There is no straightforward answer and many findings of the empirical experiments are local and contextual. However, from the number of randomised literature that has been reviewed here in this paper, Karlan and Zinman's (2010) findings in a semi-competitive market in South Africa more convincing. They showed that microcredit provision resulted in higher incomes, more borrowing, and more time being employed.

3. Theoretical Framework

Frameworks that explain microfinance intervention have one key assumption in common; that the provision of microfinance to a household will change the behaviour and practice of the household, it therefore results in a 'modified outcome for the agent' (Hulme, 2000). He further argues that there are three paradigms of impact assessment; scientific methods, humanities tradition and participatory learning and action (PLA) methods. A common approach in scientific method is Randomised Controlled Trials (RCT). RCT looks at before and after in treatment areas and control areas. It uses a diff-in-diff set up to attribute causal effects. This type of study may lead to sample bias and misspecification. Details of this approach is discussed in Hulme and Mosely (1996). Participatory Learning Action (PLA) on the other hand contradicts scientific methods on impact assessment studies. Chambers (1997) argued that scientific methods fail to capture the 'complexity, diversity and contingency' of livelihood and it reduces it down to just 'unidirectional chains' of relationships.

3.1 Households Economic Portfolio

Community, enterprises, individuals and households were the four key categories that Sebstad et al (1995) proposed in order to assess the impact of the provision of microcredit schemes. Although, their paper wasn't published or peer reviewed but this framework has been extended further since then. Cohen et al (1996) developed a Households Economic Portfolio (HEP) analysis of Sebstad et al's framework. Therefore, HEP analysis may serve as a theoretical framework for this paper. The agents are households that have been provided the opportunity to borrow from a provider, in this case Spandana. The outcome variables that could be studied for households, Sebstad et al (1995) pointed out are income levels, expenditures and household assets (durable goods). Cohen et al (1996) explained that credit

has a role in bringing changes to a Household's Economic Portfolio (HEP) structure, depending on which part of the portfolio this credit is allocated. The provision of credit creates more financial resources for the household at present time in order to spend on activities. Cohen et al (1996) suggest a number of possible hypothesis, three of which are relevant to this paper:

H-3: Participation in microenterprise services leads to an increase in the reliance of the Household on high-return production activities.

H-4: Participation in microenterprise services leads to an increase in key physical assets.

H-6: Pa9rticipation in microenterprise services leads to an increase in expenditures on the education and training of household members.

HEP incorporates a circular flow model that includes the following elements; households use physical, financial and human resources to consume, invest and produce more. Cohen et al (1996) using HEP model explain that microfinance intervention brings additional financial resources for the households to use. Household Economic Portfolio (HEP) has its limitations too in explaining microfinance intervention, for instance do not explain the impact of the external factors on households (AIMS, 2001).

Based on this conceptual framework, this paper will use households as the main agents that have received the microfinance intervention in the treatment areas. Using the hypothesis suggested by Cohen et al (1996), it will test whether a number of outcome variables (target variables listed in methodology section) change when it is made easy to access credit in the treatment areas. Bigger households are comprised of a minimum of 6 members and a maximum of 26 members. Household size is a key characteristic in studying the poorer households and therefore, it is important to know how access to microcredit is

affected when household size changes. The average household size in the prominent study carried out by Banerjee et al (2014) was five members. The suggested hypothesis in this paper is the following: with variations in the number of households, the family's inter-temporal choices change on how much to consume and to borrow. So, we expect higher rates of borrowing and consumption for households with six or more than six members in the treatment compared to control areas.

4. Empirical Approach

This paper carries out an empirical research to look at the effect of microfinance on families of different size. This is a randomised control trial (RCT) study, so therefore, it will be looking at change of pattern across a number of variables in control versus treatment effects in the sample.

4.1 Methodology

This paper looks at the treated-control areas for each of these households and assess a number of components of the household's portfolio that may have changed over time. For instance, to look for consumption of the household, it will look total expenditure per capita, expenditure per capita on durable goods, non- durable goods, food, health, education, temptation goods and festivals. This paper employs an Ordinary Least Square (OLS) layout with a regression that looks like this:

$$y_{ic} = \beta_0 + \beta_1 X_{1c} + \beta_2 X_{2c} + \beta_4 X_{3c} + \beta_5 X_{5c} + \beta_k X_{kc}\ldots + u_{ic}$$

β_1 is the intent-to-treat effect, treat is the indicator that households living in the treated area. X_{ic}'s are the causal factors of interest. X_{kc} are a number of control variables from baseline data at based at the household level. The control variables include area population, total

outstanding debt in the area, and total number of businesses in the area, mean of monthly per-capita expenditure in the area, area literacy rate per area and literacy rate calculated as per head of the households. All the standards errors are clustered at the area level using the specific area ID assigned to them.

4.2 Households Size Bigger than Six

My actual regression equation that have been used to obtain results is the following:

$$y_{ci} = \beta_0 + \beta_1 treat_c + \beta_2\ hhbig_{ci} + \beta_3\ treat_c * hhbig_{ci} + \beta_k X_k + hhbig_{ci} + u_{it}$$

Where c indicates the community, i indicates the household, y_{ci} is the outcome of interest for household i in community c, $treat_c$ is an indicator variable equal to 1, if the community is treated, 0, if the community is control. $hhbig_{ci}$ is an indicator equal to 1, if household i in community c has six or more members. This will capture the intent-to-treat effect conditioned to household size. Using this layout, it will allow me to see how outcomes vary with household size condition. In a randomised control trial the cornerstone is to carry out an intent-to-treat (ITT) analysis. This approach includes all those in the treatment area and tests the treatment policy. What this means in the context of microfinance is that by carrying out an ITT analysis, it will test whether the policy of easing access to microcredit in the treatment area led to significant differences to that of the comparison area. There are a number of other methods that are also used when investigating the effect of an intervention in a randomised control trial (RCT) context. The longitudinal analysis of changes, analysis of covariance and autoregression (Twisk et al, 2008).

4.3 Spill over Effects

$$y_{ci} = \beta_0 + \beta_1 treat_c + \beta_2\ hhbig_{ci} + \beta_3\ treat_c * hhbig_{ci} + \beta_k X_k + hhbig_{ci} + u_{it}$$

In the model above, y_{ci} does not depend on *treat$_c$* of a different group. This means spill over effects are excluded. However, when evaluating there is an assumption to be discussed. Chen et al (2009) explains how the stable unit treatment value is violated because terms implemented in the control groups are often influenced by the terms implemented in the treatment areas. Since we looking at all the control and treatment areas, there is no distinction and all subjects receive same treatment this violation is avoided. No discrimination is made against those who live in the treatment areas when allowing them to access credit, the same eligibility criteria is applied to all residents in the area.

In using this methodology, this paper will contribute to the current literature and methodology built by Banerjee et al (2014) into the role of provision of microcredit and microloan to poor households. Conditioning the effect of this provision on the household size, allows new insights into how the recipients of the microcredit behave. It also provides whether household size plays a significant role in alleviating the recipient's household's financial status.

4.4 Background

The experiment was carried out by Spandana and Institute for Financial Management Research (IFMR) in Chennai. It contains information about 120 slums in Hyderabad, Andhra Pradesh, India's fifth largest city in 2005. This data is composed of changes in the loans, amounts borrowed and expenditure to measure consumption. The household samples randomly selected were conditioned to have a female member aged 18 to 55. Originally it is a large dataset, some of which aren't relevant to my topic question, have not been used. For instance variables such as education levels and social empowerment of women in the society have been omitted from my data analysis. In order to see how the data was collected and the randomization of an unbiased sample was insured see Banerjee et al (2014).

4.4 Data

The baseline survey was carried out by Spandana, a large for profit microfinance institution in 2005, when there were no microfinance institution's (MFI) operating in these slums. The survey was mainly aimed at finding areas with high population of potential clients (borrowers). This includes the Baseline data (2005) collected from 2800 households. The principles were to look for poor people who had resided in the area for the last three years and areas with less population of construction workers. In India, construction workers travel with their work placement, in other words, they finish a construction project, they settle in a different area for a different project. Spandana management selected 120 areas with enough potential borrowers that would have been eligible for opening branches. They further dropped 16 more areas due to higher density of construction workers in these areas. In order ensure randomisation is unbiased, it happens after these areas are dropped out of the sample. They only opened branches in 52 slums, this was the treatment areas, whereas the other 52 slums remained with no branches, this acted as the control group. The 52 areas that had Spandana branches opened, had access to microloans and microcredit.

Endline 1 (2007/8) and Endline 2 (2009/10), data was collected from all the 104 slums at the household level with 6864 observations, this was after Spandana and other MFI's had launched operations. The data was collected from 52 groups for treatment and another 52 for control areas, where access to credit wasn't easy. Same households weren't resurveyed for Baseline and Endline 1 and Endline 2. However, exactly same households were resurveyed for Endline 1 and Endline 2 with the same sample frame. The same criteria was observed when selecting the households for Endline 1 and Endline 2. The re-contact rate was higher than 90% for Endline 1 and Endline 2 surveys. Each household must have resided in the area for the last three years and is rated by Spandana as eligible-borrower. In addition to that the Endline 1 and Endline 2 data were collected in at least 12 months or more intervals

after the Spandana branches opened in the treatment areas. Extra precaution were in place such as double-entry and cross-checking the data once it was computerized.

5. Data Analysis

5.1 Outcome variables

Table A, below, provides a statistical summary for the first set of outcome variables that we are interested in Endline 1 and Endline 2. It shows the household expenditure per capita on a number of categories such as durable goods, festivals and etc…. The table includes the number of observations, mean values and standard deviations for each of those variables.

Table A: Summary Statistics

Expenditure per capita	Endline 1				Endline 2		
	Obs	Mean	St. Dev.		Obs	Mean	St. Dev.
Total expenditure monthly	6827	1436.838	1106.431		6142	1899.613	1296.055
Durable expenditure per capita monthly	6781	127.893	418.081		6140	156.795	334.724
Non-durable expenditure per capita monthly	6781	1312.013	963.282		6142	1741.085	1159.905
Food expenditure per capita monthly	6827	520.278	277.180		6142	813.912	524.023
Health expenditure per capita monthly	6827	138.563	407.186		6141	211.007	559.970
Education expenditure per capita monthly	5415	170.061	254.279		4910	255.861	387.218
Temptation goods expenditure per capita monthly	6827	79.724	128.244		6142	112.248	178.596
Festivals expenditure per capita monthly	6827	65.220	109.263		6103	111.494	135.427

5.2 Has an Outstanding Loan

Table B, below, looks at indebtedness of households at Baseline, Endline 1 and Endline 2. At baseline (68%) of households already had an unpaid loan, of which a majority of (63%) were from informal loans. Borrowing from Spandana, non-Spandana MFIs and Banks were (0.51%), (1.52%) and (4.06%) respectively. Two years later at Endline 1 (2007/08), borrowing from informal sources increased to (73.37%), borrowing from Spandana, non-Spandana MFIs and banks also increased to (13.18%), (14.23%) and (8.16%) respectively. At the time of Endline 2 (2009/10) borrowing had changed in the following order: Spandana (15.14%), non-spandana MFIs (25.33%), banks (7.38%), informal loans (60.32%). The total loan amount for households at Endline 2 had increased only by 5%, when compared to Endline 1. We can only compare the patterns for Endline 1 and Endline 2 because the data was collected from the same sample frame. Even then, we cannot prompt from these changes that easing access to microcredit had helped households out of poverty. These descriptions just looks at how certain outcome values have changed over time.

Table B: Has an Outstanding Loan

| | *Obs* | *Baseline %* | | | *Obs* | *Endline 1* | | | *Obs* | *Endline 2* | |
		Yes	*No*			*Yes*	*No*			*Yes*	*No*
# Outstanding loan to Spandana	2789	0.29%	99.71%		6811	13.18%	86.82%		6142	15.14%	84.86%
# Outstanding loan to Other MFIs	2789	1.33%	98.67%		6657	14.23%	85.77%		6142	25.33%	74.67%
# Outstanding loan to Banks	2789	3.87%	96.13%		6811	8.16%	91.84%		6142	7.38%	92.62%
# Outstanding loan to Informally	2789	62.78%	37.22%		6811	73.37%	26.63%		6142	60.32%	39.68%

# Outstanding loan to Any loan	2789	67.62%	32.38%		6862	85.76%	14.24%		6142	90.52%	9.48%

Table C, Panel 1, looks at households with six or more than six members in their family at Baseline, Endline 1 and Endline 2. It looks at the same variables in Table B, but for bigger households only. These households at Baseline acquire (0.55%) to Spandana, (1.89%) to non-Spandana, (4.33%) to banks and (66.70%) through informal loans. However, at Endline 1, that is two years later; loans to Spandana (14.79%), non-Spandana (16.04%), banks (9.27%), informal loans (76.15%) increased. Furthermore, at Endline 2, we can see some noticeable changes in those percentages; Spandana (16.94%), non-Spandana (27.65%), Banks (8.12%) and informal loans (61.35%). There is only 3% increase in acquiring a loan at Endline 2 for the total number of households with six or more members when compared to Endline 1. Table C, Panel 2, looks at households with five or less than five members in their family at Baseline, Endline 1 and Endline 2. It looks at the same variables in Table B, but for smaller households only. These households at Baseline acquire credits of (0.16%) to Spandana, (1.06%) to non-Spandana, (3.65%) to banks and (60.91%) through informal loans. However, at Endline 1, that is two years later; loans to Spandana (11.93%), non-Spandana (12.82%), banks (7.3%), informal loans (71.19%), increased. Furthermore, at Endline 2, we can see some noticeable changes in those percentages; Spandana (13.73%), non-Spandana (31.09%), Banks (6.60%) and informal loans (61.35%). There is 5% increase in acquiring a loan at Endline 2 for the total number of households with five or less than five members when compared to Endline 1.

The percentages for household size with six or more members are higher for all the variables listed in Table C at Endline 2 when compared to Endline 1 and Baseline. It suggests that these households borrow more and consume more when credit is made available to them.

The 3% increase in total value for households with six or more members compare to 5% for smaller households is due to bigger household's acquiring more debts in Endline 1. Furthermore, the percentages for informal loans show that provision of microcredit by Spandana and non-Spandana MFIs did not act as substitute for the informal loans across all three periods. Informal loans are loans received from relatives, money lenders, any source that wasn't considered a bank or microfinance institution.

Table C: Has an Outstanding Loan

Household size≥6	*Obs*	*Baseline %*			*Obs*	*Endline 1*			*Obs*	*Endline 2*	
Credit		*Yes*	*No*			*Yes*	*No*			*Yes*	*No*
# Outstanding loan to Spandana	901	0.55%	99.45%		2989	14.79%	85.21%		2709	16.94%	83.06%
# Outstanding loan to Other MFIs	901	1.89%	98.11%		2912	16.04%	83.96%		2709	27.65%	72.35%
# Outstanding loan to Banks	901	4.33%	95.67%		2989	9.27%	90.73%		2709	8.12%	91.88%
# Outstanding loan to Informally	901	66.70%	33.30%		2989	76.15%	23.85%		2709	61.35%	38.65%
# Outstanding loan to Any loan	901	71.48	28.52%		3011	87.51%	12.49%		2709	90.88%	9.12%

Household size≤5	Obs	Baseline %			Obs	Endline 1			Obs	Endline 2	
Credit		Yes	No			Yes	No			Yes	No
# Outstanding loan to Spandana	1888	0.16%	99.84%		3822	11.93%	88.07%		2818	13.73%	86.27%
# Outstanding loan to Other MFIs	1888	1.06%	98.94%		3745	12.82%	87.18%		2818	31.09%	68.91%
# Outstanding loan to Banks	1888	3.65%	96.35%		3822	7.30%	92.70%		2818	6.60%	93.40%
# Outstanding loan to Informally	1888	60.91%	39.09%		3822	71.19%	28.81%		2818	57.88%	42.12%
# Outstanding loan to Any loan	1888	65.78%	34.22%		3851	84.39%	15.61%		2818	89.39%	10.61%

6. Results

The results presented here, are obtained using the regression outlined above in the methodology section. This paper has looked at two outcome variables at the household level; expenditure per capita and credit (outstanding loan amount). Furthermore, it looks for treat effects for both small and big households, then specifically for both bigger and smaller households on their own. All the standard deviations presented in parenthesis are clustered at the area level. * means significant at the 10% level, ** at the 5% level, *** at the 1% level.

6.1 Expenditure

Table 1 shows the intent-to-treat estimates of the household expenditure per capita. These are the result of the models described earlier in the methodology section with a number of control variables from the baseline. These control variables were: area population, total outstanding debt in each area, total number of businesses in each area, area mean monthly per capita expenditure, area literacy rate calculated as per household's heads only and area literacy rate. At Endline 1, rows 2, 7 and 8 shows that there are shifts in the consumption patterns on durable goods, temptation good and festivals in the treatment areas. These changes are significant at 10% significance test level. There is a significant increase in the number of durable goods that households bought in the period which they had access to microcredit. Temptation goods are the list of goods that households at the first survey stated that they would like to spend less money on them. The intent-to-treat effect coefficient shows that expenditure on both temptation goods and festivals decreased.

At Endline 2, when both comparison areas and treatment areas had access to microcredit, column 8 shows an increase in expenditure on festivals, which is the only significant change. Expenditure on temptation goods still remains negative but insignificant.

Total expenditure, and expenditure on durables and non-durables aren't significantly different between the treatment and comparison areas. Rows 4, 5 and 6 shows that the intent-to-treat expenditure coefficient on food, health and education that are negative and insignificant for both periods Endline 1 and Endline 2.

Table 1: Expenditure per month per capita (with Baseline Controls)				
		Endline 1		
		treatment & p-values		Observations
1	Total	10.78175 (35.90)	0.765	6801
2	Durables	21.313* (11.41)	0.065	6755
3	Non-Durables	-7.811 (173.25)	0.800	6755
4	Food	-13.02975 (11.63)	0.265	6801
5	Health	-3.72584 (11.46)	0.746	6801
6	Education	-1.3689 (9.34)	0.884	5397
7	Temptation	-9.084* (4.96)	0.071	6801
8	Festivals	-13.80* (8.20)	0.096	6801
		Endline 2		
		treatment & p-values		Observations
1	Total	42.2833 (49.80)	0.398	6118
2	Durables	1.5475 (9.74)	0.874	6116
3	Non-Durables	-39.9887 (45.65)	0.383	6118
4	Food	-12.93847 (21.32)	0.545	6118
5	Health	-20.83371 (17.11)	0.226	6117
6	Education	12.13831 (13.74)	0.379	4890
7	Temptation	-10.43391 (6.70)	0.122	6118
8	Festivals	6.89* (4.06)	0.093	6080

6.2 Expenditure; Household with six or More than six Members

Table 2a has two panels first for Endline 1 and second for Endlin 2. It gives the intent-to-treat effects of the monthly per capita expenditure on households with six or more than six members (Household Size≥6) for a number of categories. We are interested in *treat*hhbig*

discussion; this indicates whether bigger households are different when in the treatment areas.

Endline 1, rows 1, 3, 6 and 8 show that total monthly expenditure and spending on non-durable goods, education and festivals have decreased. Spending on durable goods, food, health and temptation goods have increased. However, all of these results are statistically not significant.

Endline 2 this is two years later, rows 2, 6, 7 and 8 indicate that spending on durable goods, education, temptation goods and festivals decreased. On the other hand, total spending increased, spending on non-durable goods, food and health also increased. However, all of these results are statistically not significant.

For bigger households (*hhbig)* discussion on its own, rows 1, 3, 4, 7 and 8 shows significant changes at 1% and 5% significance level: Total monthly expenditure is reduced, spending on non-durable goods, food and festivals have also reduced. There is an increase on monthly spending on durable goods but statistically insignificant.

Furthermore, at Endline 2 for *hhbig* discussion, in addition to all the significant changes listed in Endline 1, row 2 suggests that there is a significant increase in expenditure patterns on durable goods. Column 5 suggest that there is a significant reduction in monthly expenditure on health. This means that increased expenditure on durable goods is balanced by the reduction on spending in health and temptation goods.

Table 2a: Expenditure per month per capita Household size≥6 (with Baseline Controls)

Endline 1

		treatment	p-values	hhbig	p-values	treat*hhbig	p-values	No. Obs
1	Total	16.114 (66.127)	0.808	-310.719*** (34.684)	0.000	-5.936 (66.920)	0.929	6801
2	Durables	47.694 (56.342)	0.399	90.065 (62.742)	0.154	83.988 (85.452)	0.328	6755
3	Non-Durables	-1.134 (59.453)	0.985	-293.999*** (28.836)	0.000	-7.532 (59.206)	0.899	6755
4	Food	-21.099 (16.334)	0.199	-144.249*** (8.824)	0.000	12.515 (15.439)	0.419	6801
5	Health	-12.252 (21.666)	0.573	-27.012 (18.893)	0.156	12.503 (22.697)	0.583	6801
6	Education	6.464 (12.511)	0.607	-5.8578 (9.182)	0.525	-10.371 (13.446)	0.442	5397
7	Temptation	-12.865 (8.760)	0.145	-30.666*** (5.765)	0.000	5.652 (8.765)	0.520	6801
8	Festivals	-13.286 (9.582)	0.169	-16.294** (5.157)	0.002	-0.642 (6.406)	0.920	6801

Endline 2

		treatment	p-values	hhbig	p-values	treat*hhbig	p-values	No. Obs
1	Total	-66.713 (81.244)	0.413	-351.284*** (60.639)	0.000	36.959 (83.065)	0.657	6118
2	Durables	58.366 (71.662)	0.417	134.753** (60.435)	0.028	-64.741 (86.230)	0.454	6118
3	Non-Durables	-63.93 (72.917)	0.383	-309.712*** (2.161)	0.000	36.058 (72.309)	0.619	6118
4	Food	-32.332 (26.066)	0.364	-158.834*** (26.066)	0.000	28.775 (35.552)	0.420	6118
5	Health	-20.802 (35.451)	0.559	-77.052** (29.873)	0.011	0.325 (36.671)	0.993	6117
6	Education	15.798 (22.541)	0.485	-10.48147 (14.413)	0.469	-4.966 (22.455)	0.825	4890
7	Temptation	-7.009 (10.569)	0.509	-18.771** (6.377)	0.004	-4.861 (11.023)	0.660	6118
8	Festivals	17.634** (7.561)	0.022	-10.631** (4.311)	0.015	-15.475 (8.381)	0.068	6080

6.3 Expenditure; Household with Five or less than Five Members

Table 2b is also constitutes two panels first for Endline 1 and second for Endline 2. It gives the intent-to-treat effects of the monthly per capita expenditure on households with five or less than five members (Household Size≤5) for a number of categories. As before, we are interested in *treat*hhsmall* discussion for Endline 1, this indicates whether smaller households are different when in the treatment areas.

Endline 1, rows 2, 4, 5, 6 and 7 show that spending on durable goods, food, health, education and temptation goods have decreased. Total expenditure and spending on non-durable goods and festivals have increased. However, all of these results are statistically not significant.

Endline 2 this is two years later, row 8 shows the only significant increase in spending is on festivals. Rows 2, 4, 6 and 7 indicate that spending on durable goods, food, education and temptation goods have decreased. On the other hand, total spending increased, spending on non-durable goods and health also increased. However, all of these results are statistically not significant.

For smaller households (*hhsmall)* discussion on its own, all the outcomes increased and all of them are statistically significant except spending on durable goods. Furthermore, at Endline 2 for *hhsmall* discussion all of the outcomes have increased and they are statistically significant except the increased spending on festivals. However, spending on durable goods have decreased. The reason behind this decrease maybe the fact that spending on durable goods increased at Endline 1, and since these items remain with the households, they didn't need to spend as much on durable goods anymore.

Table 2b: Expenditure per month per capita Household size≤5 (with Baseline Controls)

		treatment	p-values	hhsmall	p-values	treat*hhsmall	p-values	Obs.
1	Total	10.396 (39.469)	0.793	327.542*** (35.452)	0.000	5.202 (58.171)	0.929	6801
2	Durables	188.563** (93.853)	0.047	3.252 (75.377)	0.966	-148.274 (100.853)	0.145	6755
3	Non-Durables	-15.326 (31.67)	0.629	287.092*** (30.085)	0.000	17.756 (48.154)	0.713	6755
4	Food	-6.712 (13.260)	0.614	121.960*** (13.757)	0.000	-9.694 (13.757)	0.483	6801
5	Health	0.895 (13.586)	0.948	27.044** (15.641)	0.087	-7.946 (20.303)	0.696	6801
6	Education	1.287 (10.893)	0.906	41.516*** (8.827)	0.000	-4.008 (11.752)	0.734	5397
7	Temptation	-4.649 (5.013)	0.356	30.019*** (5.256)	0.000	-7.571 (6.621)	0.255	6801
8	Festivals	-14.145* (8.246)	0.089	13.591** (4.876)	0.006	0.818 (5.961)	0.891	6801

		treatment	p-values	hhsmall	p-values	treat*hhsmall	p-values	Obs.
1	Total	-44.877 (51.773)	0.388	325.015*** (46.583)	0.000	10.046 (59.389)	0.866	6118
2	Durables	34.829 (63.589)	0.585	-61.589 (60.997)	0.315	-38.787 (76.959)	0.615	6116
3	Non-Durables	-50.562 (46.771)	0.282	278.793*** (39.981)	0.000	23.750 (50.868)	0.642	6118
4	Food	-3.184 (22.518)	0.888	136.375*** (15.592)	0.000	-15.434 (22.894)	0.502	6118
5	Health	-37.633* (25.436)	0.052	44.072* (25.436)	0.086	31.180 (28.964)	0.284	6117
6	Education	17.743 (1.10)	0.272	31.971** (13.756)	0.022	-10.025 (18.851)	0.596	4890
7	Temptation	-9.729 (7.165)	0.178	22.794*** (6.322)	0.000	-0.903 (8.822)	0.919	6118
8	Festivals	-3.490 (5.190)	0.503	6.715 (5.426)	0.219	18.896** (6.724)	0.006	6080

6.4 Access to Credit

Table 3, rows 1, 4, 5 and 6 intent to treat coefficients show a significant change in access to credit to the households at Endline 1. This is the period that only Spandana had launched operating at the treatment areas. Access to Spandana credit is significantly positive. The reduction in access to credit through informal sources is also statistically significant. Column 5 shows that the number of late repayments were negative and statistically significant in this period, i.e. a lot of people could not repay their first credit uptake on time. Column 6 shows that there were positive number of cycles that people borrowed when the access to microcredit was made easier. Even though the late repayments may be seen as a sign that people won't desire to borrow as they could not repay on time, but the ease provided for the treatment areas encouraged borrowing. Furthermore, this also shows in the reduced percentage of borrowing from informal sources. At Endline 2, when all other MFIs had started operating at treatment and comparison areas, the only positive significant shifts observed from the intent-to-treat effect is borrowing from Spandana and number of cycles that people borrowed. Borrowing from other MFIs were negative but statistically insignificant.

Table 3 : Access to Credit (with Baseline Controls)				
		Endline 1		
		treatment & p-values		Observations
1	Spanda	0.162*** (0.022)	0.000	6783
2	Other MFI	-0.006 (0.024)	0.803	6630
3	Other Bank	0.004 (0.012)	0.728	6783
4	Informal	-0.051** (0.021)	0.016	6783
5	Ever late payment?	-0.058** (0.026)	0.029	6448
6	Number of cycles borrowed	0.111** (0.041)	0.008	6788
		Endline 2		
		treatment & p-values		Observations
1	Spanda	0.080*** (0.021)	0.000	6118
2	Other MFI	-0.292 (0.269)	0.278	6118
3	Other Bank	0.00026 (0.0085)	0.976	6118
4	Informal	0.00425 (0.0174)	0.808	6118
5	Ever late payment?	0.00921 (0.021)	0.662	6118
6	Number of cycles borrowed	0.135* (0.068)	0.049	5903

6.5 Credit; Households with six or More than six Members

Table 4a, is constructed of two panels; Endline 1 and Endline 2. It gives the intent-to-treat effects of easing access to credit conditioned to household size with six or more than six members. The access to credit is easy from Spandana in the treated areas. We are interested in *treat*hhbig* discussion for Endline 1 here, this indicates whether bigger households are different when in the treatment areas. Row 6 shows that there is a reduction in the number of cycles borrowed at Endline 1 but this is not statistically significant. Borrowing from

Spandana, Other MFI and so on have increased yet all of the increments are statistically insignificant.

At Endline 2, rows 1, 4, 5 and 6 shows that there are statistically insignificant reductions in borrowing from Spandana and informal sources. There is also indications of late repayments and less borrowing cycles but they are also statistically insignificant. However, borrowing from other MFIs and Banks have increased at this period. If we recall, at Endline 2, other MFIs had launched their operations alongside Spandana and given the opportunity banks may have also eased their credit issue criteria. This can explain the reduction in borrowing from Spandana.

For *hhbig* discussion on its own, accessing credit from Spandana, other MFIs, informal, late payments and number of cycles borrowed have increased and they are statistically significant. All these shifts are positive and indicates that households with six or more than six members, have aptitude to borrow more. At Endline 2, when comparison areas also had the same access to credit, borrowing from Spandana, other MFIs, informal and number of cycles borrowed are positively significant. Borrowing from banks and late payments are also positive but not statistically significant.

Table 4a: Access to Credit with Household size≥6 (with Baseline Controls)

Endline 1

		treatment	*p-values*	*hhbig*	*p-values*	*treat*hhbig*	*p-values*	*Obs.*
1	Spandana	0.151*** (0.019)	0.000	0.015* (0.018)	0.097	0.015 (0.085)	0.421	6783
2	Other MFI	-0.009 (0.022)	0.678	0.035** (0.014)	0.012	0.005 (0.018)	0.797	6630
3	Other Bank	0.002 (0.013)	0.903	0.019** (0.009)	0.046	0.003 (0.014)	0.807	6783
4	Informal	-0.052 (0.026)	0.049	0.052** (0.017)	0.004	0.0008 (0.025)	0.973	6783
5	Ever late payment?	-0.079** (0.029)	0.008	0.054** (0.018)	0.003	0.030 (0.023)	0.205	6448

| 6 | Number of cycles borrowed | 0.137** (0.042) | 0.001 | 0.077*** (0.020) | 0.000 | -0.038 (0.033) | 0.248 | 6788 |

Endline 2

		treatment	p-values	hhbig	p-values	treat*hhbig	p-values	Obs.
1	Spandana	0.889*** (0.021)	0.000	0.051*** (0.013)	0.000	-0.012 (0.021)	0.546	6118
2	Other MFI	-0.035 (0.030)	0.239	0.059** (0.019)	0.002	0.009 (0.026)	0.735	6118
3	Other Bank	-0.006 (0.012)	0.612	0.010 (0.010)	0.032	0.009 (0.013)	0.496	6118
4	Informal	0.010 (0.027)	0.714	0.042** (0.021)	0.048	-0.009 (0.029)	0.767	6118
5	Ever late payment?	0.019 (0.028)	0.508	0.026 (0.019)	0.175	-0.014 (0.028)	0.615	6118
6	Number of cycles borrowed	0.152 (0.070)	0.032	0.173*** (0.041)	0.000	-0.026 (0.055)	0.636	5903

6.6 Credit; Households with Five or less than Five Members

Table 4b, is constructed of two panels; Endline 1 and Endline 2. It gives the intent-to-treat effects of easing access to credit conditioned to household size with five or less than five members. The access to credit is easy from Spandana in the treated areas. We are interested in *treat*hhsmall* discussion for Endline 1 here, this indicates whether smaller households are different when in the treatment areas. Rows 1 - 4 shows that there is a reduction in borrowing from Spandana, Other MFIs, Banks and informal sources. Rows 5 and 6 indicates that there is an increase in late repayments and the number of cycles borrowed. However, all of these shifts are statistically insignificant.

At Endline 2, rows 1, 2, 5 and 6 show that there are statistically insignificant reductions in borrowing from Spandana and Other MFIs, and also reductions in number of

late repayments and borrowing cycles. Borrowing from other banks and informal sources have increased during this period. All of these results are statistically insignificant.

For *hhsmall* discussion on its own, at Endline 1, accessing credit from Spandana, other MFIs, banks informal, late payments and borrowing cycles have decreased. Only the reduction in borrowing from informal sources, number of late repayments and borrowing cycles are statistically significant.

At Endline 2, there are significant reductions in borrowing from Spandana, banks and borrowing cycles. There are insignificant reductions in borrowing from other MFIs, informal sources. However, there are increased number of repayments for this period but again statistically insignificant.

Table 4b: Access to Credit with Household size≤5 (with Baseline Controls)

Endline 1

		treatment	*p-values*	*hhsmall*	*p-values*	*treat*hhsmall*	*p-values*	*Obs*
1	Spandana	0.175*** (0.027)	0.000	-0.006 (0.009)	0.534	-0.024 (0.017)	0.151	6783
2	Other MFI	0.011 (0.030)	0.726	-0.008 (0.018)	0.669	-0.030 (0.021)	0.165	6630
3	Other Bank	0.008 (0.014)	0.588	-0.010 (0.009)	0.350	-0.007 (0.012)	0.594	6783
4	Informal	-0.049 (0.025)	0.053	-0.037** (0.017)	0.036	-0.004 (0.022)	0.857	6783
5	Ever late payment?	-0.059** (0.0298)	0.040	-0.069*** (0.020)	0.001	0.0007 (0.025)	0.977	6448
6	Number of cycles borrowed	0.107** (0.049)	0.031	-0.070** (0.028)	0.014	0.007 (0.034)	0.846	6788

Endline 2

	treatment	*p-values*	*hhsmall*	*p-values*	*treat*hhsmall*	*p-values*	*Obs*

1	Spandana	0.082*** (0.025)	0.001	-0.030** (0.014)	0.039	-0.004 (0.019)	0.846	6118
2	Other MFI	-0.008 (0.032)	0.807	-0.022 (0.020)	0.291	-0.039 (0.026)	0.138	6118
3	Other Bank	-0.014 (0.012)	0.253	-0.027** (0.010)	0.009	0.025 (0.013)	0.053	6118
4	Informal	-0.009 (0.023)	0.684	-0.027 (0.025)	0.266	0.024	0.381	6118
5	Ever late payment?	0.017 (0.025)	0.491	0.007 (0.021)	0.745	-0.014 (0.027)	0.605	6118
6	Number of cycles borrowed	0.166** (0.080)	0.041	-0.094** (0.044)	0.036	-0.057 (0.060)	0.340	5903

7. Conclusion

In the previous section, this paper looked at two outcome variables; expenditure per capita and access to credit (borrowing) for the treated areas. The paper has carried out the intent-to-treat (ITT) analysis on three different sets of data. First on the treatment areas as a whole, then, restricted to household size with six or more than six members and lastly, restricted with household size with five or less than five members. In this section presents the findings and state whether the results were in accordance with previous studies.

7.1 Findings on Expenditure

Concordant with Banerjee et al's (2014) results, this paper finds that there is a significant increase expenditures on durable goods for households in the treatment compared to comparison areas. This positive shifts occurred after the microfinance intervention see, Table 1. Moreover, bigger households in the treatment areas increased spending on durable goods, food, health and temptation goods at Endline 1. Whereas, at Endline 2, their spending on durable goods decreased. This reveals that these long lasting items bought had lasted till

the second period, therefore, households allocated less spending on this category. Spending in food and health remain positive and unchanged until the second period, it suggests that these categories are less elastic to borrowing. Bigger households expenditure decreased on non-durable goods, education and festivals at Endline 1 however, spending on non-durable goods increased at Endline 2. This increase may have counterbalanced the decrease in spending on durable goods and temptation goods.

At Endline 1, smaller households in the treatment areas in contrast to bigger households, had lower spending on durable goods, food, health and temptation goods. They had more spending in total and higher expenditure on non-durable goods and festivals.

At Endline 2, smaller households in the treatment areas in contrast to bigger households had lower spending on food but more spending on festivals. Both had positive total spending however for bigger households the coefficient was three times bigger than that of smaller households. This is expected to happen as the number of heads per household increase.

Overall, there are significant differences in the way which different household sizes allocate their additional resource received in the form of microcredit intervention. As stated above, bigger households spend more on durable goods as soon as they received a loan whereas smaller households do not emphasis on increasing household stocks. These results are revealing on how different households prioritise their expenditure categories and thus may serve as a guide to microcredit institutions on how to provide tailored credit packages.

7.2 Findings on Access to Credit

Likewise, in align with previous studies, this paper's finding show that making access to credit easier led to significant amount of borrowing from Spandana. However, this was only small marginal percentage increases. Making access to credit easy through microcredit

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providers did act as substitute for villagers who seek informal loans. Borrowing through informal sources reduced in the periods that the study was carried out.

When looking bigger households at Endline 1, borrowing from all categories had increased, though statistically insignificant. Given that people felt the presence of a microcredit provider institution, the number of cycles borrowed relaxed. At Endline 2, this is two years later, as expected, it indicates that number of loan repayments increased. Borrowing from Spandana and informal sources decreased, this may be due to competition by other MFIs which had launched operating alongside Spandana.

Comparing these results with that of smaller households in the treatment areas, at Endline 1, they had noticeably lower borrowing from Spandana, other MFIs, Banks and informal sources. This evidence provides some support to my hypothesis in this paper, that bigger households will borrow more. At Endline 2, smaller households, like bigger households had decreased borrowing from Spandana but they had reduced borrowing from other MFIs too. Their borrowing from banks and informal sources had increased. The reasons behind this contrast maybe due to unconsidered factors in this study such as family businesses, household preferences or loan provider criteria. Nevertheless, bigger households in the treatment areas have borrowed more when access to credit was made easy.

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