Impact of Village Savings and Loan Associations: Evidence from a cluster randomized trial

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Abstract

Most of the world's impoverished reside in rural regions of developing nations, where they have limited access to financial aid. Local financial intermediation has grown more dependent on the establishment of Village Saving and Loan Associations (VSLAs). We conduct a two-year study on the effect of VSLAs in Northern Malawi by conducting a cluster randomised experiment. The number of meals eaten daily, household spending as defined by the USAID Poverty Assessment Tool, and the number of rooms in the home all show evidence of positive and substantial intention-to-treat effects. The VSLAs have had a positive impact on agricultural investments and small company revenue since they have boosted savings and credit available to small enterprises.

Introduction

Rural regions in developing nations are home to the overwhelming majority of the world's impoverished. Long spans of time between agricultural inputs and harvest results, uncertainty regarding harvest outcomes, and reliance on the weather are some of the hardships they face. This necessitates that they be able to manage their spending, obtain credit, and utilise risk management measures (Conning and Udry, 2007). It's not encouraging to look at rural financial intermediation's past, and even the exponential worldwide expansion in microfinance has been focused in urban and semi-urban regions (Allen and Panetta, 2010; Daley-Harris, 2009; Demirgüç-Kunt and Klapper, 2012). In the absence of conventional financial institutions, families turn to informal financial mechanisms such as networks, moneylenders, and other types of moneylenders (Collins et al., 2009; Rutherford, 2001). Many people are familiar with ROSCAs (rotating savings and credit associations) (Besley et al., 1994). 1 To put it simply, members pay to a common fund from which a different member is selected at each meeting to receive a portion of the money collected. In the course of a cycle, save for the first and final members, each member will be a saver and a borrower (Anderson and Baland, 2002; Besley et al., 1994; Bouman, 1995; Klonner, 2008). While ROSCAs have many of the features of VSLAs, they provide greater flexibility in savings and loans, standardise the governance structure to ensure accountability, as well as a variety of other features that make VSLAs an increasingly popular local financial institution.

The experimental strategy

Counterfactuals must be constructed that are not affected by selection bias, which often occurs because of non-random programme placement and participant self-selection (Angrist and Pischke, 2009; Banerjee and Duflo, 2009; Duflo

et al., 2007). In order to address the issue of non-random programme placement, we conducted a cluster randomised control experiment in which the VSLA intervention was rolled out in each town. Our first year of implementation (the treatment villages) included 23 out of the 46 programme villages, and the second and third years of implementation included 23 out of the 46. (the control villages). Villages were classified into strata according to visible and intangible features that were thought to be linked to the most important outcomes of interest (Bruhn and McKenzie, 2009). 15 NGO field officers picked seven hats with the names of the communities in each stratum and drew a name from each hat. Village centres are shown in Fig. 1 below, with the inner symbol indicating which stratum the village belongs to and the outside sign showing whether it is in the treatment or control group, respectively, a circle or square. " Pre-randomization awareness seminars were conducted in all 46 villages as part of the VSLA intervention. For a more in-depth summary of the project's introductory efforts, see Appendix A. Field officers from the implementing partner gathered names of villages who indicated an interest in joining the VSLA groups during these awareness events, allowing us to stratify based on the initial level of interest.

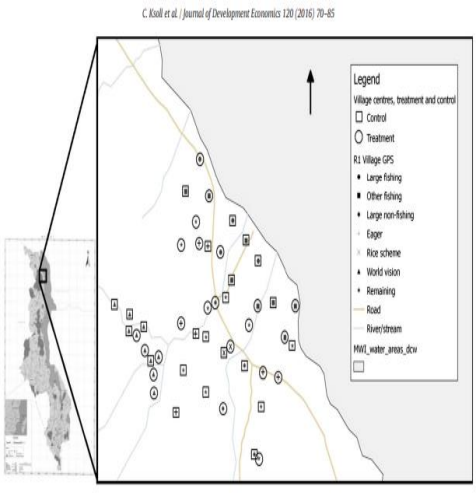
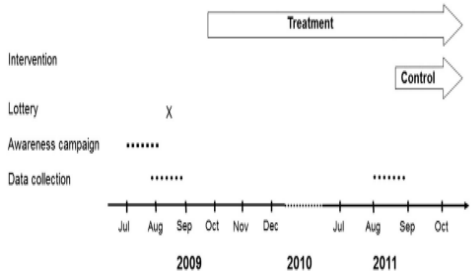


Fig. 1. Map of treatment and control villages in randomization blocks.



Aims and objectives As indicated in the logical framework analysis (LFA) matrix, the implementing NGO specified the intended and expected results and related assumptions in the project's logical framework analysis (LFA) matrix. 18 The matrix identifies possible outcomes of the intervention, but it does not indicate how these outcomes would be monitored. Finally, we pick out variables that are near to what we had originally planned (see Table 2). 19 A pre-analysis plan as recommended by Casey and colleagues (2012) isn't the same as this technique, but it is a good way to keep the analysis tied to these outcome measures. Although we report extensively on outcomes that are not predetermined, we also analyse probable routes of the observed influence. Predefined primary studies based on LFA indicators are clearly distinguished from non-predefined secondary analyses examining mechanisms, as shown in the table below.

Data and estimate methods

In order to ensure that all homes that indicated an interest in participating in the groups created were included, we stratified the sample within each village based on the information acquired by NGO during the awareness sessions. Each community had a total of 38 households sampled. 20

Table 2
Predefined outcome measures and corresponding outcomes for the analysis.

Logical framework indicator (Soldev's choice)	Corresponding final outcome variable (authors' choice)
Hungry period is reduced	1) Number of months in past year with less than three meals per day.
Increase in the consumption of food	2) Number of meals previous day. 3) Food consumption per week per adult equivalent (log)
The average number of IGAs carried out by the VSLA participants has increased	4) Number of income-generating activities in each household.
Increase in the volume of savings by the VSLA groups from project-related activities by 2012	5) Total savings (log)
The share of the targeted population living below USD 1.25/day has decreased as measured using USAID's PAT	6) USAID PAT's prediction of per capita expenditure (log)
HHs have improved their housing standards	7) Number of rooms in dwelling 8) House has cement floor
Increase in household asset ownership	9) Asset count

The authors supervised the Invest in Knowledge Initiative's data collection between 2009 and 2011. From July 26 through August 30, 2009, data was collected. Between July 8 and August 14, 2011, the endline data was gathered. Between 2009 and 2011, 24 interviewers interviewed up to 1775 homes in each year's data collection process. Using a lengthier questionnaire with more in-depth questions on loans and business activities, a second subsample of 834 homes was surveyed as well. Figure 1 depicts the locations of the communities where the project was put into action and afterwards assessed. Using the picture, we can observe that treatment and control villages (marked by circles and squares, respectively) are contiguous, which allowed some families from control villages to join VSLA groups in the treatment villages. In 2011, we established a tracking survey to reduce attrition, which resulted in a total of 1715 homes being polled. Fewer than 4% of the original sample was lost between the 2009 and 2011 survey rounds, a low attrition rate when compared to that of comparable panel surveys (Glewwe and Jacoby, 2000). When a designated respondent leaves a family for whatever reason (such as divorce), we have a number of split households, which means that one household from the 2009 survey is now two households in 2011. One of these additional homes was chosen at random in the estimations below to provide a balanced panel. Because of this, we restrict the sample to intact families in the robustness section to see how it affects the findings.

As a starting point,

When villages are randomly split into treatment and control groups, we look to see whether the observable features of the two groups are the same or different. Our final outcome factors and other characteristics of the homes are summarised in Table 3 below for the complete sample in 2009. In the sample, men were the primary breadwinners in 86% of homes. In the United States, the average age of a household head was little under seven years old. As of the interview, each family had an average of six individuals, with a daily spending level of around USD 1.17 (2005 values) and an average of more than four months of the year when they didn't have three meals a day on average.

approach based on evidence

A simple estimating strategy may be employed since randomization assures that treatment results are the same for both the treatment villages and control villages without VSLAs in order to assess their treatment impacts. The intention-to-treat impact may be estimated using a variety of different estimators. Intention-to-treat (ITT), i.e. the average impact of the VSLA intervention for all the families in the treatment villages, regardless of whether the households actually participated, is first estimated as follows: 22

$$y_{ij} = \alpha + \delta^{DM} VSLA_j + \theta Block_j + \varepsilon_{ij}$$

Household I in Village J received yij as the final outcome, whereas Village J was randomly allocated to either participate in the Village Support and Learning Activities (VSLA) programme or not. The difference-in-means ITT estimate is used to determine whether Village J received yij. All our linear regressions incorporate the randomization stratum, known as blocks, as proposed by Duflo et al (2007). As a

weight for each home, we employ the inverse sampling probability, and we cluster the standard errors by village. As a result, we selected more interested homes than necessary. The delayed value of the dependent variable is part of our second specification.

$$y_{ij} = \alpha + \delta^{DMlag} VSLA_j + \tau y_{ij-1} + \theta Block_j + \varepsilon_{ij}$$

Angrist & Pischke, 2009: pooled difference-in-differences estimator

$$y_{ijt} = \alpha + \beta VSLA_j + \gamma post_t + \delta^{DiD}(VSLA_j \cdot post_t)_{jt} + \theta Block_j$$

in where (VSLAj postt)jt indicates whether or not the observation is from a treatment village in the 2011 survey, and postt indicates whether or not the observation is from the 2011 post treatment survey. We are interested in the ITT parameter DiD, which is a pooled difference-in-differences calculation. By first differencing, we eliminate any unobserved time-invariant heterogeneity at the household level.

$$\Delta y_{ij} = \alpha + \delta^{FD} VSLA_j + \Delta \varepsilon_{ijt}$$

Our preferred estimate for an unfiltered result is the ITT estimate provided by FD, which is based on first differences.

Table 3
Baseline characteristics and balance between treatment and control groups.

	(1)	(2)	(3)	(4)	(5)	(6)
Variable	N	Mean	SD	Treatment average	Control average	Difference (t-value)
Project outcomes						
Number of months with fewer than three meals a day	1737	4.10	4.03	4.26	3.92	1.18
Number of meals yesterday	1737	2.65	0.56	2.61	2.70	1.45
17-Food consumption per week per adult equivalent (MK, log)	1737	6.10	0.58	6.07	6.14	1.52
Number of income-generating activities (including agriculture and livestock)	1737	1.99	1.10	1.94	2.04	1.73*
Total savings (log)	576	7.87	1.66	7.77	8.00	0.59
Per capita expenditure predicted by USAID PAT (log)	1737	0.16	0.42	0.16	0.16	0.39
Size of house (number of rooms)	1737	2.75	1.25	2.73	2.77	0.37
House has cement floor	1737	0.10	0.30	0.11	0.09	1.47
Asset count	1737	12.89	7.87	12.84	12.94	0.46
Other household characteristics						
Age of household head	1726	38.94	15.34	39.00	38.88	0.15
Household size	1737	5.77	2.46	5.71	5.83	0.68
Household is female-headed	1737	0.15	0.36	0.17	0.14	0.87
Years of education in household	1734	6.87	3.26	7.07	6.65	1.61
Household owns land	1732	0.96	0.19	0.95	0.97	1.48
Household is member of VSLA	1734	0.06	0.23	0.06	0.05	0.66

Notes: Table presents the mean and standard deviation of baseline characteristics in the sample as a whole (columns 2 and 3), as well as the mean separately by treatment status in columns 4 and 5. Displayed results are on the full sample of 1737 households for which we have information for all pre-defined outcomes. Total savings information was only collected from the subset of 834 households, which were administered the longer questionnaire. Log (savings) only presented for observations with non-zero savings. Observation numbers are reduced when there is missing information in a central variable. Column 6 reports the absolute value of the t-statistic from a weighted regression of the dependent variable on an indicator variable for VSLA and stratification fixed effects, testing for baseline difference in means between treatment and control villages. Huber–White standard errors clustered at the village level presented in parentheses. ∗ p b 0.1

The non-linear models

For censored variables, we use tobit regressions on a logarithmic scale (Cameron and Trivedi, 2005). Difference-in-means models for variables on a logarithmic scale are preferred since it is not clear how to provide the accurate estimate and inference in difference-in-differences and difference-in-means with lagged variable tobit models. 23 Due to a significant number of zeros, we use median regression for company income when analysing the profitability of firms (suggesting a censored model). Tobit regressions, on the other hand, are misguided since corporate profits might be negative. Standard errors in OLS estimations are substantial because of outliers. To test whether VSLAs have an influence on company income, we employ quantile regressions that can handle the big positive and negative values we see.

Multiple tests of various hypotheses Even if a programme has no influence on any of the outcomes, the likelihood of at least one null hypothesis being rejected is greater than the significance threshold when numerous

hypotheses are tested (see, for example, Anderson, 2008). Bonferroni's adjustment is one of the most often used approaches for dealing with this problem. Despite this, Bonferroni's adjustment is too cautious, resulting in a significant reduction in power. To correct standard errors for multiple hypothesis testing, Anderson (2008) presents an overview and implements a variety of approaches to correct standard errors, including controlling for the false discovery rate. This process was utilised recently by Banerjee et al. (Benjamini and Hochberg, 1995). (2015b). The q-values of Benjamini et al. (2006) and Anderson (2008) have been sharpened for our major findings, which may be found in Appendix B.

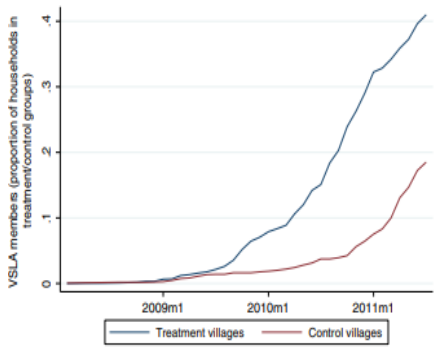


Fig. 3. Cumulative VSLA membership by village category. Notes: This figure presents the timing of membership in VSLA in treatment and control villages. Sample observations are reweighted so that they represent (estimates of) the proportion of households. Information on the timing of membership is based on survey data.

Results for main outcomes

Take-up

Before assessing the impact of the intervention, we describe how successful it was in attracting participants to form VSLAs. Fig. 3 gives

Table 4
VSLA membership.

	Control villages	Treatment villages	Differences
Baseline (2009)	0.052	0.061	0.010
Endline (2011)	0.207	0.451	0.259***
Difference	0.155***	0.390***	0.235**

Notes: Standard errors used in calculating significance are clustered at the village level. ∗∗ p b 0.05, ∗∗∗ p b 0.01

Table 5
Effects on predefined outcomes.

Outcome	(1) Difference in means	(2) Difference in means with lag	(3) Difference-in-difference	(4) First-difference
Number of months with fewer than three meals a day	−0.203	−0.272	−0.493	−0.555
	(0.38)	(0.36)	(0.45)	(0.38)
	[0.703]	[0.35]	[0.303]	[0.181]
Number of meals yesterday	0.055	0.069**	0.145**	0.126**
	(0.03)	(0.03)	(0.07)	(0.05)
	[0.378]	[0.121]	[0.252]	[0.091]
17-Food consumption per week per adult equivalent (MK, log)	0.026	0.046	0.080	0.097
	(0.05)	(0.05)	(0.07)	(0.06)
	[0.703]	[0.326]	[0.303]	[0.181]
Number of income-generating activities (including agriculture and livestock)	−0.179***	−0.144***	−0.104	−0.060
	(0.06)	(0.05)	(0.11)	(0.07)
	[0.034]	[0.063]	[0.338]	[0.324]
Total savings (log)	1.034**	n.a.	n.a.	n.a.
	(0.43)			
	[0.07]			
Per capita expenditure predicted by USAID PAT (log)	0.030	0.037*	0.041*	0.042**
	(0.03)	(0.02)	(0.02)	(0.02)
	[0.53]	[0.121]	[0.252]	[0.107]
Size of house (number of rooms)	0.104	0.133*	0.135*	0.158**
	(0.10)	(0.07)	(0.07)	(0.06)
	[0.53]	[0.121]	[0.252]	[0.091]
House has cement floor	0.019	0.002	0.001	−0.010
	(0.02)	(0.02)	(0.02)	(0.02)
	[0.53]	[0.61]	[0.593]	[0.324]
Asset count	−0.643	−0.455	−0.484	−0.374
	(0.62)	(0.38)	(0.42)	(0.35)
	[0.53]	[0.234]	[0.303]	[0.324]

Notes: Table presents results for the ITT impact of VSLA on predefined outcomes. With the exception of row 5 (total savings) all regressions are weighted least squares regressions. For total

tobit regressions are given, which is why the findings in columns (2) have been omitted– (4). Using a dummy treatment assignment and fixed stratification effects to account for sample weights, the values in each column are regression estimates for the predetermined outcomes. Round parenthesis indicate Huber–White standard errors that are concentrated at the village level. P-values of 0.1, 0.05, and 0.01, respectively, are considered significant. Sharpened q-values from multiple hypothesis correction, such as those in Anderson, 2008. There are no extra controls present in Column 1

(simple means). Lagged baseline covariate is included as a dependent variable in Column 2. Difference-in-differences findings are shown in column 3, whereas household-level fixed effects are shown in column 4. Table 3 provides an overview of the sample size. From 2009 to 2011, the number of members grew steadily, with treatment villages having significantly more members than control villages, according to a study conducted in 2011. Based on the results of the first baseline survey conducted in 2009, 6% of residents in both the control and treatment villages claimed to belong to a VSLA or another kind of savings club. Two years later, the control group's percentage had risen to 20.7%, while the treatment group's percentage had risen to 45.3%. According to the 1% threshold of significance, this 23.6 percentage point difference in VSLA take-up between treatment and control villages indicates that randomization was successful in encouraging more treatment villagers to join. However, the randomization suffers from two-sided non-compliance with the therapy (Gerber and Green, 2012). Ones designated to treatment had a lower participation rate than the villages assigned to control, although there were some VSLA groups in both categories. A significant difference in the time of treatment and control villages may be seen in Figure 3. Random assignment into treatment and control groups did not have a significant effect on population growth prior to mid-2009. Membership in the treatment communities surged after the intervention began in 2009. Until late 2010, membership in the control villages seems to have followed the overall pattern of the pre-project period. This suggests that the contamination of the control group occurred quite recently. However, we can't rule out the possibility that the estimates reported below have been contaminated by this.

For predetermined results, see

These four columns in Table 5 below show how the VSLA intervention performed on the predefined outcomes when the differences in means, differences in means with lagged dependent value, pools of differences, and first-difference regression methods were used to estimate the effects on the intention to treat. Using individual outcome regression significance levels as our starting point, we first go through the findings. Our interpretation is therefore based on q-values from different hypotheses. Over the course of the two-year experiment, we discovered that the addition of VSLAs to the therapy regimen had a substantial influence on a number of outcome factors. It became easier to get enough food, as shown by the increased number of meals eaten the day before the interview. Income-generating activities have dropped while overall savings have grown. There is some indication that overall expenditures have risen as expected by PAT, and the size of the home has grown as well — but no substantial influence has been found upon hunger duration, food intake (as assessed by the 17 most prevalent food items), floor quality, or a gross asset count.

The ability to stand the test of time

When we apply multiple hypothesis adjusted standard errors, our findings are less statistically significant and do not hold up across specifications. The effect on savings and the number of income-generating activities (remains) considerable, although at a reduced level of significance, under the basic means specification (5 percent and 10 percent levels respectively). For continuous outcomes, the first difference specification, our preferred choice for the difference-in-differences model for the difference-in-differences model, is significant, but only at a 10% significance level for the number of meals eaten yesterday and home size. With a q-value of 0.11, the influence on spending levels anticipated by PAT is not statistically significant. It seems that VSLAs still have an impact on food security, savings, and the number of rooms in the home, according to multiple hypothesis adjusted tests of significance. However, the statistical

significance and robustness of the findings are much diminished.

Intermediate outcome results Investigating probable pathways for the impacts seen begins with determining if the intervention genuinely improved access to and use of the financial services supplied, including savings and credit. We then look at the activities of households in the agriculture and commercial sectors.

The amount of money saved and the amount of money given away.

Savings are a precondition for future credit possibilities and insurance under the VSLA intervention. Overall, our savings were more than what was predicted by the ITT. Table 7 examines the implications for various forms of highly liquid savings. We conclude that VSLA savings have a significant impact on total savings. Non-VSLA savings as a whole and any of its subcategories have not undergone any significant changes in our analysis. 28 Why do VSLAs save so much money, yet savings in other types of savings aren't decreasing? According to the statistics, the additional savings do not come from a reduction of meals per day or from PAT, our asset-based estimate of expenditures. 29 Credit and more income might also be factors in the increasing VSLA savings. In the following sections, we estimate the effect on credit and on company and agricultural revenue.

Table 6
Regressions without split households.

Outcome	(1) Difference in means no split household	(2) Difference in means with lag and no split household	(3) Difference in difference with no split household	(4) First-differences without split households
Number of months with fewer than three meals a day	−0.204	−0.266	−0.478	−0.541
	(0.38)	(0.36)	(0.45)	(0.38)
Number of meals yesterday	0.058	0.071**	0.150**	0.129**
	(0.04)	(0.03)	(0.07)	(0.05)
17-Food consumption per week per adult equivalent (MK, log)	0.023	0.043	0.079	0.094
	(0.05)	(0.05)	(0.07)	(0.06)
Number of income-generating activities (including agriculture and livestock)	−0.185***	−0.151***	−0.113	−0.068
	(0.06)	(0.05)	(0.11)	(0.07)
Total savings (log)	1.043**	n.a.	n.a.	n.a.
	(0.43)			
Per capita expenditure predicted by USAID PAT (log)	0.030	0.035*	0.041*	0.040*
	(0.03)	(0.02)	(0.02)	(0.02)
Size of house (number of rooms)	0.102	0.133*	0.137*	0.159**
	(0.10)	(0.07)	(0.07)	(0.06)
House has cement floor	0.017	0.001	0.002	−0.010
	(0.02)	(0.02)	(0.02)	(0.02)
Asset count	−0.652	−0.475	−0.504	−0.414
	(0.63)	(0.39)	(0.43)	(0.36)

Notes: The table presents weighted regressions of predefined outcomes on a treatment dummy, following the same specifications as in Table

Table 7
ITT effects on savings outcomes.

Outcome	(1) Difference in means
Total savings (log)	1.034**
	(0.4304)
VSLA savings (log)	3.480***
	(0.902)
Non-VSLA savings (log)	0.048
	(0.479)
Savings with friend/relative (log)	−0.763
	(1.681)
Savings at home (log)	0.192
	(0.569)
Savings with bank (log)	0.910
	(1.761)

Notes: Table presents results for tobit regressions estimating the impact of VSLA on the log of the value of savings. We implement the suggestion of Cameron and Trivedi (2005) of setting the cutoff at a very small value below the lowest observed value for zero values. Columns 1 presents the results from a tobit regression on the VSLA dummy and block fixed effects. ∗∗ p b 0.05, ∗∗∗ p b 0.01.

The amount of money that may be credited to

The intervention's second essential component is the utilisation of VSLA members' pooled funds as credit. Using the same estimating methods as in Table 5, the impacts of ITT on a variety of credit-related outcomes are shown in Table 8. Additionally, living in a treatment village led to a rise in the quantity and value of loans that had been active for at least a year prior to living there (total loan amount). Increased loan take-up for investment reasons, as well as a rise in the number of loans taken and the value of loans taken for investment in agriculture, were two of the outcomes of this intervention's impact on the economy. Sizeable and typically significant gains have been made. However, only the amount borrowed for agricultural reasons grew dramatically, while the amount borrowed for

commercial purposes remained stable. In the treatment villages, the raw percentage of households having loans grew from 6% to 26% if we include all forms of loans,31 implying that the availability and use of credit improved significantly.

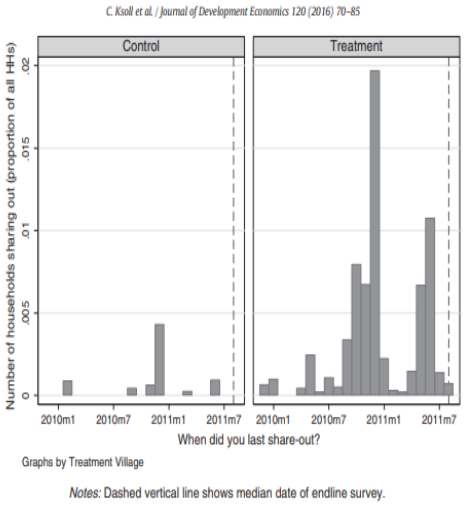


Fig. 4. Timing of share-outs (by treatment status)

production of food and fibre

Table 9 examines whether maize inputs and outputs have altered because most share-outs occur at the end of the year, when seed and fertiliser purchases are made. This table provides the weighted baseline mean, whereas columns 2 through 5 show the difference in means, the lag in differences, the pooling differences, and first-difference regression findings. Treatment vil lages were more likely to utilise fertiliser in their maize plantings, at least according to the data collected as input. There is a beneficial impact on the chance that families in treatment villages sell a portion of their maize produce and the total.

Table 9
ITT effects on maize planting practice and outcomes.

Outcome	(1) Baseline mean	(2) Difference in means	(3) Difference in means with lag	(4) Difference-in-difference	(5) First-difference
Household uses any fertilizer on maize	0.452	0.135***	0.127***	0.106[a]	0.093[a]
	[.498]	(0.05)	(0.05)	(0.06)	(0.05)
Area with maize (acres)	1.375	−0.336[a]	−0.241	−0.120	−0.154
	[.897]	(0.17)	(0.15)	(0.15)	(0.16)
Quantity of maize harvested (kg, log)[a]	5.759	−0.103	n.a.	n.a.	n.a.
	[.925]	(0.13)	n.a.	n.a.	n.a.
Household sold any maize	0.202	0.095[a]	0.116**	0.140[a]	0.198***
	[.402]	(0.05)	(0.03)	(0.07)	(0.06)
Value of agricultural sale (MK, log)[a]	9.375	−0.582	n.a.	n.a.	n.a.
	[1.55]	(0.56)	n.a.	n.a.	n.a.
Value of maize sale (MK, log)[a]	7.936	1.489**	n.a.	n.a.	n.a.
	[.958]	(0.73)	n.a.	n.a.	n.a.

Notes: Table reports estimates of the impact of VSLA on agricultural inputs. Column (1) presents the mean of the outcome at baseline, with standard deviations in square brackets. Column (2) presents the results from the difference in means specification, column (3) from the difference in means with lagged value specification. Columns (4) and (5) present results from difference-in-differences and first differences specifications, respectively. Rows without "a" superscript contain Least squares regressions. Regressions with "a" superscript are tobit regressions, following Cameron and Trivedi (2005) suggestion of replacing zero with the lowest observed value minus a small amount. For these regressions, column 1 presents the estimated mean for observations in the population with non-zero values. ∗ p b 0.01, ∗∗ p b 0.05, ∗∗∗ p b 0.01

What you do for a living

The estimated impacts of ITT on business revenue are shown in Table 10. This is a measure of profit since it represents the amount of money the company has made (or lost) in the most recent month of operation. It seems that the average number of enterprises in the treated villages has grown, based on OLS regressions in the first panel. When we look at the average result, we can see that business income grew by

an average of 6590 MWK (about the same as the share-out). In addition, because of the wide range in company revenue, the calculated standard errors are quite big, and the conclusion is not statistically significant.e result is not statistically significant.

Table 10
Effects on small business outcomes.

Outcome		Baseline mean	Difference in means	Difference in means with lag
OLS regressions				
Number of businesses (excluding agriculture and livestock)		0.93	0.192	0.241*
		[0.778]	(0.129)	(0.125)
Total income from all businesses (MWK)		10523.2	6589.8	2453.4
		[49834.1]	(8926.315)	(5609.115)
Quantile regressions				
			600	386.5
	25th	0	(463.3)	(435.8)
			1,500*	1295*
	50th (median)	700	(904.4)	(758.3)
			1150	1652
Business income all respondents	75th	4000	(1747)	(1559)
			900	615.0
	25th	723	(730.2)	(694.2)
			2500*	2811**
	50th (median)	2500	(1330)	(1208)
			4600*	3911*
Business income respondents with business at baseline	75th	6100	(2407)	(2069)
			0	n.a.
	25th	0	(123.1)	
			0	n.a.
	50th (median)	0	(1108)	
			−2400*	n.a.
Business income respondents without business at baseline	75th	0	(1421)	

Notes: Table reports estimates of the impact of VSLA on income generating activities. Column 1 presents the mean of the outcome at baseline, with standard deviations in square brackets. Columns 3 and 4 present results from difference in means and difference in means with lag, respectively. OLS regressions follow specifications described in Table 5. Quantile regressions include stratification dummies, as well as a dummy for baseline business activity. Quantile standard errors are cluster-bootstrapped and include the randomization strata. Sample: long questionnaire respondents.∗ p b 0.1, ∗∗ p b 0.05.

Effectiveness in terms of money

This section gives some basic cost-effectiveness estimates in order to determine whether VSLAs are beneficial. The overall expenses (USD 201,000) divided by three gives us an annual estimate of the implementation costs for the project under consideration. Since the VSLA intervention was so modest and relied on village agents to a higher degree than the randomization permitted by the study arrangement, the particular intervention investigated was very expensive. 33 Out of the 3800 families in the treatment villages, the implementing partner reported having 1783 VSLA members in total by September 2011. USD 75,34 for each member and USD 35 for each family in a treatment community were the total costs. Household expenditures are expected to rise by 4.2 percent, resulting in an additional 0.124 USD per household per day, or USD 0.31 at the PPP adjusted price level (PPP 2005). The initiative was profitable after a total of 280 days or a little more than nine months of operation (based on the two year impact estimates). 35 Beyond the impact on household spending, these figures do not take into account effects throughout the course of the two years.

Conclusion

This study shows that better local financial market intermediation may have a considerable influence on family well-being and economic activity in developing nations' distant rural regions. Microfinance institutions and (especially) banks are seldom profitable in distant rural regions in developing nations, which has been referred to as the "last mile challenge" of microfinance. Village Savings and Loan Associations have been actively promoted as a solution. In contrast, once established, VSLAs do not need any outside funding or administration. They are completely self-managed and depend on local funds that are re-invested in the community. The confidence required for enhanced local financial market intermediation seems to be sustained by a series of properly thought-out protections and governance elements. Even if home wealth and VSLAs grow, these semi-formal institutions may one day be merged into the official financial system.

A protocol for NGO involvement in communities, Appendix A

According to the field reports from the implementing agency, both the treatment and control groups got the same information. We followed the 2009 VSLA guidebook and

organised sessions in accordance with its two main divisions.

Community leaders and government officials have a tendency to be influenced by one particular ideology.

Getting the word out about VSL.

As a result, the inaugural meeting was attended by a number of high-ranking officials, as well as representatives from the project's numerous development committees and the religious leadership involved.

Attending this meeting and winning over the major players' support was the main goal. The following items were on the to-do list:

- The implementing organisation is introduced in paragraph one.
- Goals and objectives for the project.
- 3rd party audience to be catered to
- Offers of products and services.
- The function of municipal authorities and administrators.
- They were informed about comparable schemes in neighbouring areas (that had been successful).

Every one of the 46 communities was visited for the second round of meetings. With these gatherings, the community was given a chance to learn more about the program's aims, methods, and procedures as well as register for training. Villagers were allowed to manage their own funds and administer a lending facility through which they might generate a profit, according to the stated goals. A cash kit, which would be paid out as a loan, was highlighted as the only source of funding for the savings organisations. In the initial year of implementation, not all villages could get training since 50 groups would be constituted each year for three years. Instead, a lottery would be held to determine which communities would be included in the project from 2009 to 2011 and which villages would be included after 2011.

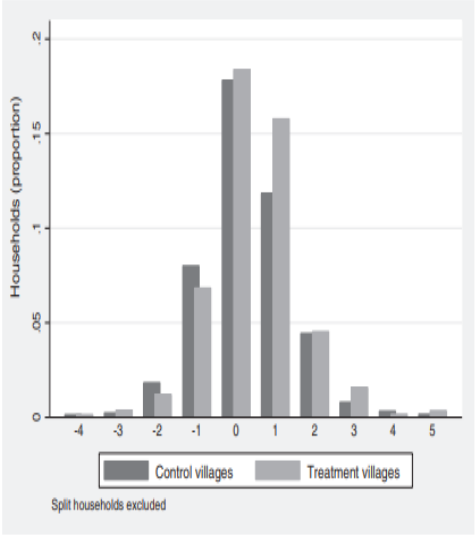


Fig. A1. Change in number of rooms over time

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