Commitments to Save: A Field Experiment in Rural Malawi*

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Abstract
We report the results of a field experiment that randomly allocated smallholder cash crop farmers to treatments facilitating savings in formal savings accounts. In collaboration with a microfinance institution in Malawi, we tested two primary treatments, facilitating savings in either: 1) "ordinary" accounts, or 2) both ordinary and "commitment" accounts. Commitment accounts allowed customers to restrict access to their own funds until a future date that they chose. A control group did not receive any savings treatment but was tracked alongside the treatment groups. Take-up of both types of accounts in the treatment groups was high, but only the commitment treatment has statistically significant effects on subsequent outcomes. The vast majority of commitment savings release dates chosen were in weeks immediately prior to the next planting season, when funds would be needed for agricultural inputs. The commitment treatment had large positive effects on deposits and withdrawals immediately prior to the next planting season, on agricultural input use in that planting, crop sales from the subsequent harvest, and on household expenditures in the months immediately after harvest. Patterns of heterogeneity in take-up and treatment effects suggest that the positive impacts of commitment derive from keeping funds from being shared with one's social network.

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1. Introduction

Microfinance institutions worldwide have engineered a revolution in access to finance for the poor. In 2002, the Microcredit Summit estimated that there are 2,572 microfinance institutions around the world with 67.6 million clients, who are have received access to credit but as well as financial services such as savings and insurance (Daley-Harris 2003).

While these outreach numbers are impressive, microfinance today (and particularly microlending) is largely oriented towards supporting non-agricultural activities, and institutions have had difficulty expanding the range of services offered in rural areas where the non-agricultural economy is poorly developed (Morduch 1999; Armendariz de Aghion and Morduch 2005). Research is needed to identify products and product features that would be of value to farmers, support agricultural development, and be profitable for microfinance institutions.

Reducing the barriers to savings in rural areas of developing countries could bring substantial benefits to farm households. The incomes of smallholder farmers are severely constrained by the inability to finance crucial inputs such as fertilizer and improved seeds, particularly for export crops. Credit supply in rural areas is limited, and farmers have few opportunities to accumulate savings in formal banks. This creates a situation in which farmers are frequently credit and liquidity constrained and profitable investments must be foregone.

The alternatives to formal savings are informal savings, such as cash held at home, which is subject to losses due to theft or fire. Other types of informal savings include investments in durable goods with low or no return. Formal savings may also serve as a buffer stock in times of crisis, so when formal savings is absent individuals may have to rely on inefficient informal insurance networks.

A number of explanations have been advanced for low levels of formal savings in developing countries. Transaction costs for formal savings may be high for a variety of reasons, including substantial distances to branches, costly transport, and mistrust towards formal financial institutions. In addition, financial illiteracy may prevent households from opening accounts due to a lack of knowledge as to the benefits of formal savings and lack of familiarity with account-opening procedures.

Formal savings may also be low due to psychological factors, such as impatience (a strong preference for the present over the future) and issues of self-control (for example, hyperbolic discounting). There is evidence for both developed and developing countries that people frequently limit their options in advance in anticipation of self-control problems in the future, which could be a response on the part of sophisticated or self-aware hyperbolic discounters.

Yet another potential explanation for low savings levels may be the operation of informal insurance systems in village settings. Economists and anthropologists have documented such systems, which depress individual asset accumulation due to requirements to share resources with others in the insurance network (see, e.g., Maranz 2001; Ligon, Thomas, and Worall 2002, Platteau 2000).

Previous work on innovative financial products with a commitment component in a developing country context include Ashraf, Karlan and Yin (2006b). This paper evaluates the impact of commitment savings to a primarily rural context. Other related work regarding self-control and farmer self-financing includes Duflo, Kremer, Robinson (2010), who estimate the impact of offering farmers in Kenya small, time-limited discounts to purchase fertilizer immediately after one season's harvest. In a non-experimental context, Aportela (1998) finds positive impacts of banking in rural Mexico. Dupas and Robinson (2010) also randomize account

opening assistance in a small town setting and find positive effects on working capital investment, profits, and risk-coping among small market sellers in Kenya.

This paper reports initial results of a field experiment among smallholder cash crop farmers in rural Malawi. Farmers in Malawi and other developing countries experience difficulties in saving to purchase farm inputs. Loans are not readily available, and they carry high costs; annual interest on a micro-loan in Malawi can exceed 30 percent. Farmers who rely on loans year after year pay a heavy cost in terms of interest and could benefit substantially from saving crop proceeds and financing their own inputs in subsequent seasons.

In partnership with a local financial institution, Opportunity International Bank of Malawi (OIBM), we randomized offers of account-opening assistance for two types of savings accounts to farm households and provided farmers the opportunity to have their harvest proceeds directly deposited into their individual accounts. This essentially eliminated transaction costs of opening and depositing money into savings accounts. In addition, we also randomized an offer of this ordinary account alongside a "commitment" savings account that allowed account holders to request that funds be frozen until a specified date (e.g., immediately prior to the planting season, so that funds are preserved for farm input purchases). This enables us to explore the importance of self-control issues and/or sharing norms for formal savings.

The evaluation of the impact of the intervention uses a randomized control methodology. Farmer clubs in the sample are randomly allocated to one the treatment conditions (that differ in the types of saving accounts there were offered), or to a control group that is only given an information treatment but not offered the new savings facilities.

In terms of potential impacts, if transaction costs are preventing farmers from having formal savings then assisting farmers in opening accounts and making deposits of their crop proceeds

for them should lead to high take-up of those offers and increase farmers' formal savings. If, on the other hand, self-control or sharing norms play a major role in explaining low savings in this population, then we should expect savings levels to be even higher for farmers that were offered commitment savings accounts.

We find that take-up of both types of accounts in the treatment groups was high, but only the commitment treatment has statistically significant effects on subsequent outcomes. The vast majority of commitment savings release dates chosen were in weeks immediately prior to the next planting season, when funds would be needed for agricultural inputs. The commitment treatment had large positive effects on deposits and withdrawals immediately prior to the next planting season, on agricultural input use in that planting (an increase amounting to 48% of the control group mean), crop sales from the subsequent harvest (27% increase over the control group mean), and on household expenditures (27% increase) in the months immediately after harvest. Patterns of heterogeneity in take-up and treatment effects suggest that the positive impacts of commitment derive from solving self-control problems as well as keeping funds from being shared with one's social network.

The remainder of this paper is organized as follows. Section 2 explains the study design and briefly describes the characteristics of the sample. Section 4 presents the main empirical results. Section 4 discusses the results, and Section 5 concludes.

2. Study Design

The study was conducted in rural Malawi on a sample of smallholder tobacco farmers. Tobacco is central to the Malawian economy, as it is the country's main cash crop. About 70%

of the country's foreign exchange earnings come from tobacco sales, and a large share of the labor force works in tobacco and related industries.

The farmers in this study are organized into farmer clubs. We partnered with a financial institution, Opportunity International Bank of Malawi (OIBM), to select clubs to participate in this study and design and offer the financial products described below.

The clubs chosen for this project were tied exclusively to one of two large commercial buyer companies. Through the cooperation with the buyer companies farmer clubs usually have access to loans that are made in form of farming inputs (fertilizer and seed) and extension services. In this study, the loans were administered by OIBM under what is formally a group liability contract (practically this element is not strictly enforced, cf. Gine, Goldberg, Yang 2009). In return for input loans the contract with the buyer gives the company the right to make a first offer at the auction floors, and effectively the crop is sold to those buyers exclusively.

Treatment Conditions

The first experimental condition in the study was a "pure" control group that received only an information treatment. In addition, there were two treatment conditions that were given account opening assistance and offered to have their harvest proceeds directly deposited into individual farmers' accounts (in addition to an information treatment identical to that administered to the control group). The two treatment conditions involved farmers being offered only an ordinary savings account (the "ordinary" treatment) or both an ordinary and a commitment savings account (which we refer to as the "commitment" treatment).

To isolate the impact of a particular intervention from other confounding factors each farmer club is randomly assigned to either one of the treatments or the control group. Clubs had roughly

15 farmers each. 56 clubs were assigned the ordinary treatment, 57 the commitment treatment, and 52 were assigned to the control group.

Figure 1 presents the timing of the experiment with reference to the Malawian agricultural season. The baseline survey and interventions were administered in April and May 2009, immediately before the 2009 harvest. The next season's planting occurred in November and December 2009. The next period of note is the "hungry" season in roughly February and March 2010 immediately prior to the next harvest in May through July 2010. The follow-up survey was implemented in July through September 2010.

The sample for analysis consists of roughly 1,350 farmers who were surveyed at both baseline and follow-up. Attrition from the baseline to the follow-up survey was 16.4% and has no large or statistically significant relationship with treatment status (results available upon request).

Below are descriptions of various specific aspects of the experiment.

Control group

Farmers assigned to this group serve as the control group. OIBM held information workshops with these farmer clubs about the benefits of formal savings. This condition provides the counterfactual to test if offering an account and a direct deposit mechanism increases savings levels at all. It is important to note that that the control group was treated identically compared to the other treatment conditions regarding the transaction costs of participating in the study, i.e. with respect to number and length of meetings.

Direct deposit into individual savings accounts

For farmers in this study, Figure 2 presents the process through which farmers sold their crop and received funds in bank accounts. For farmers in the control group, farmer clubs sent

their tobacco to the national auction floors to be sold. The proceeds net of loan repayments, fees and surcharges were deposited in club-level shared bank accounts. Members of the clubs including members authorized to access the club account – usually the chairman or the treasurer – came to OIBM branches and withdrew the funds in cash. Farmers then divided up the cash among one another.

In the treatment conditions, farmers were offered the option to have their crop proceeds deposited directly into individual savings accounts. For farmers who chose this option the net proceeds were directly transferred from the club account into individual savings accounts in the farmer's name. Thus, this part of the intervention was essentially only a change of the delivery mechanism for farmers' cash. With this change, farmers received their cash by accessing their individual accounts at the OIBM branch.

In practice, to decide how much money should be transferred to which accounts, farmers arrived at the branch to confirm that positive proceeds net of repayment were available on the club level. Authorized members of the clubs then filled out a sheet specifying amounts and beneficiaries of the individual transactions.

Account opening assistance

Most farmers did not already have individual accounts to have proceeds deposited into. One of the key components of this project, therefore, was to help farmers to open accounts. Project staff collected account-opening information immediately if farmers decided to take up the offer during the savings workshop that was administered immediately following the baseline survey by OIBM in the field.

In the savings workshop, OIBM provided training to farmers about both types of accounts, depending on the treatment group. Farmers in the "ordinary" treatment group who may have

learned about and requested commitment accounts were not denied those accounts, but they were not prompted to open them, either. Ordinary savings accounts are simple savings with a regular interest rate. Commitment accounts carried the same interest rate and were identical in terms of other account features (e.g., withdrawal and account-closing fees), aside from the commitment features.

Commitment savings accounts

The Commitment savings accounts allowed farmers to specify an amount to be saved and a "release date" when the bank would allow access to the funds. In particular, this is potentially useful way for farmers to preserve some of their harvest earnings until the next planting season for input purchases or other uses (such as school tuition, money for the hungry season, etc.). Farmers who chose to open commitment savings accounts were also required to have an existing account or to open a new ordinary account with immediate access to funds from allocations of proceeds that were not meant to be locked away.

Farmers stated how much they wanted to go into the ordinary vs. commitment savings accounts after their crops would be sold. For example, suppose a farmer stated that that he wanted MK5,000 in an ordinary account and MK10,000 in a commitment savings account. When crops were then sold, the order of priority was for funds to go first into the ordinary account, then into the commitment savings account, with any remainder going back into the ordinary account.

Estimation Strategy

A number of dependent variables are of interest, such as deposits and withdrawals immediately prior to the next planting season, inputs used in the next planting, crop output and

sales in the next planting, and household expenditures (and particularly food expenditures) after the next harvest.

To estimate the impact of the treatments we estimate the following regression:

$$(1) \qquad Y_i = \delta + \alpha_1 Ordinary_i + \alpha_2 Commitment_i + \boldsymbol{X}_i' \boldsymbol{\gamma} + \mu_i$$

Y_i is the dependent variable of interest. Let $Ordinary_i$ be an indicator variable for assignment to the ordinary treatment and $Commitment_i$ be an indicator variable for assignment to the commitment treatment. $\boldsymbol{X}_i$ is a vector of control variables measured in the baseline survey, prior to treatment. μ_i is a mean-zero error term.

Coefficients α_1 and α_2 are the impact on the dependent variable of the ordinary treatment and the commitment Treatment, respectively. The counterfactual is given by δ, which captures the level of the dependent variable in the control group (which was not offered any savings account or direct deposit). The difference (α_2- α_1) represents the difference in the impact of ordinary treatment compared to commitment treatment.

Characteristics of farmer households and clubs

All variables expressed in money terms are in Malawi kwacha (MK145/USD during this period).

Table 1 presents summary statistics of baseline household and farmer club characteristics. Baseline survey respondents are on average 46 years old and have less than 6 years of education. Only 7% were female. The mean of farmers' experience with growing their primary cash crop is roughly 9 years. Farmers live in households with an average of 5.9 members. The project was

run within the range of two branches. About 35% of farmers fell in the scope of one of the branches (Kasungu), and the remainder are served by the second branch (Mponela). The average number of members per club is 15.4.

3. Impact of treatments on savings

Impact of treatments on savings transactions (deposits and withdrawals)

Table 2 presents regression results from estimation of equation 1. Three types of dependent variables are presented, namely total deposits, total withdrawals, and net deposits into OIBM accounts in different time periods. The "pre-planting" period is March 2009 to October 2009, and is the period when funds need to be accumulated (from the last season's harvest) and then withdrawn prior to the next planting. The "planting" period covers November 2009 to April 2010 immediately prior to the 2010 harvest. These dependent variables are obtained from OIBM administrative data.

The most apparent pattern is that in the pre-planting period, both ordinary and commitment treatments lead to higher deposits as well as higher withdrawals compared to the control group (for which the mean of the dependent variable is given by the constant term in the regression). Coefficients on both treatments are positive and statistically significantly different from zero in the first column (deposits), and negative and statistically significantly different from zero in the second column (withdrawals). The coefficient on the commitment treatment is substantially larger than the coefficient on the ordinary treatment, although the difference in coefficients is not statistically significantly different from zero (the p-values on the F-tests of equality of coefficients at the bottom of the table are both far above conventional statistical significance levels). The third column (net deposits) reveals that the commitment treatment had a

positive (but not statistically significant) effect on net deposits which is again larger in magnitude than the effect of the ordinary account. The difference in coefficients between ordinary and commitment treatments is marginally statistically significantly different from zero (the p-value is 0.17).

The results from the first two columns of Table 2 indicate that substantial amounts of funds flowed into and out of OIBM accounts in the period prior to the late-2009 planting. We will soon examine the extent to which these funds appear to have been used for agricultural inputs. Before we do so, it is useful to examine availability of funds and withdrawals of funds during the planting season, November 2009 to April 2010 (last three columns of Table 2), which is interesting since it spans the February-March 2010 "hungry" season before the 2010 harvest comes in. Column 4 indicates that the treatments had no substantial effect on deposits. Column 5 reveals that withdrawals are substantially higher during this period for farmers in the commitment treatment, compared to either the control group or the ordinary treatment group. By contrast, there is no large or statistically significant effect of the ordinary treatment on withdrawals during this time period. This result points to a potential benefit of the commitment treatment in the form of better access to resources and therefore smoother consumption during the annual lean or "hungry" season.

Impact of treatments on inputs, crop sales, and expenditures

We now turn to impacts of the treatments on inputs, crop sales, and expenditures. Table 3 presents regression results from estimation of equation 1 for these dependent variables from the follow-up survey.

The first column of the table reveals that the commitment treatment had a large positive and statistically significant effect on the total value of inputs used in the late-2009 planting.

Compared to MK56,580 in inputs used by control group farmers on average, commitment treatment farmers used MK27,420 (or 48%) more. By contrast, while the coefficient on the ordinary treatment is also positive, it is only about one-third the magnitude of the commitment treatment coefficient and it is not statistically significantly different from zero. The difference in the coefficients on the two treatments is marginally statistically different from zero (the p-value is 0.13).

Column 2 indicates that the larger input use caused by the commitment treatment is followed by higher total value of crop sales in the 2010 harvest. The coefficient on the commitment treatment is large and statistically significantly different from zero at the 10% level. The increase in crop sales (MK27,614) amounts to 27% of mean sales in the control group. The coefficient on the ordinary treatment is positive but very small in magnitude and is not statistically significantly different from zero. The difference in the coefficients on the two treatments is statistically different from zero at the 10% level.

Columns 3 and 4 of the table examine impact of the treatments on food expenditures and total expenditures in the follow-up (post-harvest) survey. Corresponding to the results for inputs and sales, the commitment treatment coefficient is positive and statistically significantly different from zero for both outcomes, while the coefficient on the ordinary treatment is smaller and not statistically significantly different from zero. The commitment treatment impacts represent a 25% and 27% increase in food and total consumption, respectively, compared to the control group.

4. Discussion and conclusions

In sum, we find that facilitating commitment savings for smallholder cash crop farmers in Malawi has substantial impacts on savings prior to next planting season, agricultural inputs applied in next season, access to funds during next lean (pre-harvest) period, crop sales at next harvest, and on food and total expenditures after next harvest. By contrast, the impact of facilitating "ordinary" accounts not as large or statistically significant.

Given the large impacts of the commitment treatment, it is important to ask why the treatment appears to have had such substantial effects, while the ordinary treatment did not. There are two possibilities. First, the commitment account may have helped farmers solve their self-control problems, giving them the discipline to maintain their balances until the next planting season when they could be used for agricultural inputs. Second, the commitment accounts may have helped farmers to refrain from sharing with others in their social network.

Additional analyses that we have carried out (not reported here, but available on request) provide stronger support for the latter explanation – that the commitment account helped shield funds from the social network. Essentially, we find that the impact of commitment savings is higher for individuals who make more transfers at baseline, which we take as a proxy for the extent to which an individual faces pressure to share with others. By contrast, the impact of commitment savings has no large or statistically significant relationship with hyperbolic preferences as expressed in the baseline survey (a result which contrasts with a key finding of Ashraf, Karlan, and Yin 2006 in the Philippines).

It is important to address the external validity of these results. An important point is that we do not test impact of direct deposit itself, which may be important in stimulating use of the accounts. OIBM administrative data reveal that, aside from the direct deposits, other (cash) deposits into accounts are very low. So it is not clear that simply setting up commitment

accounts would have high impact without the direct deposit facility. Testing this question is an important area for future research.

These results are likely to be most applicable to cash crop farmers where sale proceeds can be channeled directly into bank accounts by the crop buyer. These individuals may have higher incomes on average than typical farmer, but on the other hand they are also relatively easy to access. These individuals are therefore "low hanging fruit" for future interventions.

Our results therefore point to a potentially easy means for MFIs to raise farm inputs and incomes for current loan customers. It is relatively common for lenders to have direct funds-transfer arrangements with cash crop buyers for loan recovery. When such arrangements exist already, current loan customers can simply be offered direct deposit of crop proceeds into commitment accounts.

A final point worth making is that, while it is likely that the commitment treatment improved the well-being of farmers in that treatment condition, the overall impact on the community at large of commitment accounts is likely less positive. This is because of our preferred interpretation that the commitment accounts helped with input utilization precisely by helping farmers withhold resources from others in the community. It is possible, for example, that others in the social network were less able to cope with unexpected shocks (e.g., health shocks) due to reduced assistance from neighbors or relatives who had commitment accounts. While we believe it is unlikely that the net impact of the commitment treatment on communities would be negative overall, we do not shed any direct light on this issue in the current paper. We believe that investigation of the impacts of commitment accounts on others in the social network is a fruitful avenue for future research.

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Figure 1: Project timing

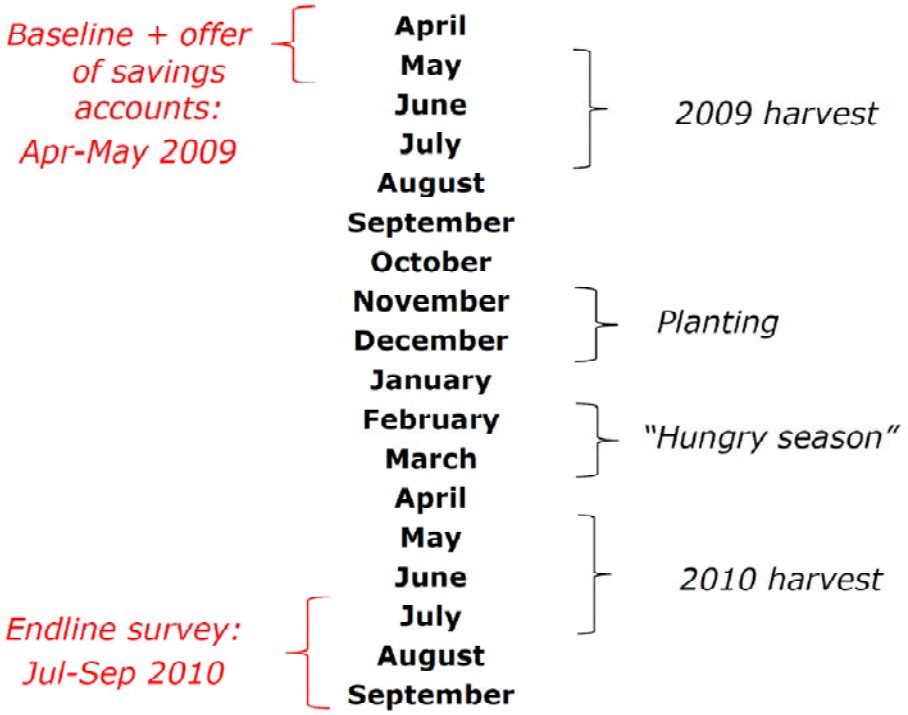

Figure 2: Auction Sales and Bank Transactions

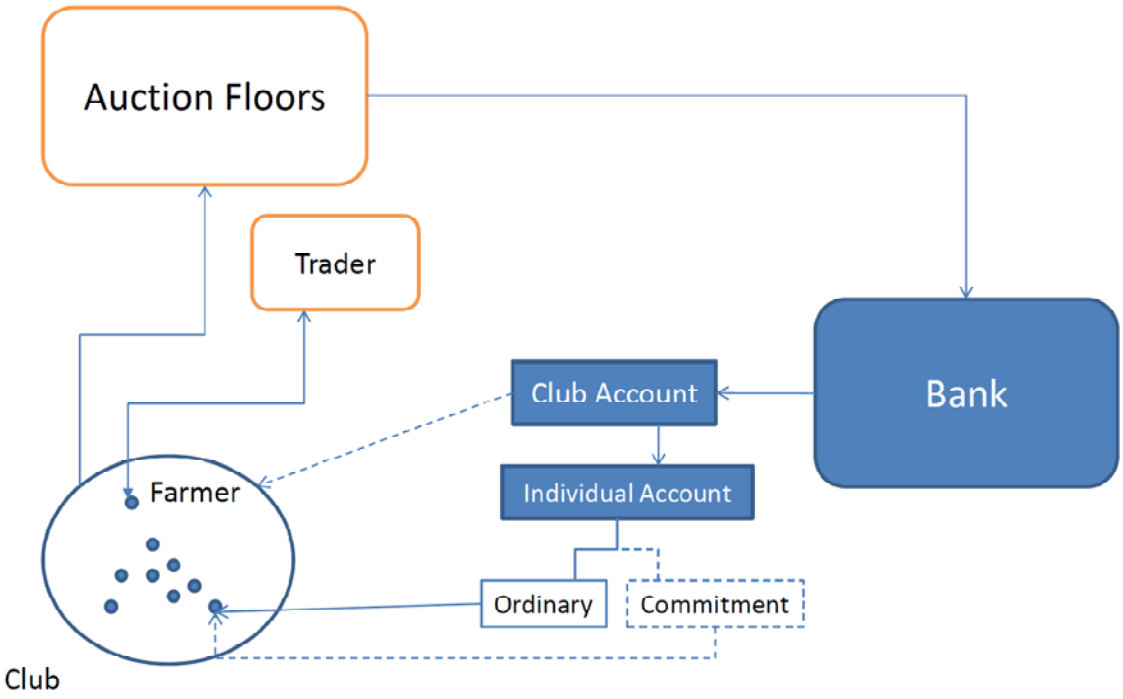

Table 1: Summary statistics

	mean	sd	p10	median	p90	Num. Obs.
Treatment indicators						
Control group	0.32	0.47	0	0	1	1359
Ordinary accounts	0.37	0.48	0	0	1	1359
Ordinary and commitment accounts	0.31	0.46	0	0	1	1359
Baseline survey variables, prior to treatment						
Number of household members	5.93	2.03	3	6	9	1359
0/1: Respondent female	0.07	0.25	0	0	0	1359
0/1: Household head female	0.04	0.19	0	0	0	1359
0/1: Spouse of respondent lives in hh	0.96	0.21	1	1	1	1359
Age of respondent	45.67	13.25	29	45	63	1359
Years of education	5.60	3.49	0	6	10	1359
0/1: no formal education	0.11	0.31	0	0	1	1359
0/1: some primary schooling	0.50	0.50	0	0	1	1359
0/1: completed primary schooling	0.22	0.42	0	0	1	1359
0/1: some secondary schooling	0.11	0.32	0	0	1	1359
0/1: completed secondary or higher	0.05	0.23	0	0	0	1359
Asset index (pca)	0.10	2.10	-1.55	-0.64	2.629	1359
Livestock index (pca)	0.06	1.32	-0.932	-0.315	1.486	1359
[1000 MK] Cash at home	1.61	6.08	0	0	4	1359
0/1: Any formal savings account	0.64	0.48	0	1	1	1359
[1000 MK] Self-reported formal savings	2.36	9.05	0	0	4	1359
Years of growing tobacco	8.97	8.74	2	5	20	1359
0/1: Will always take a risk	0.61	0.49	0	1	1	1359
Numeracy: # right answers out of 3	1.35	1.12	0	1	3	1359
0/1: answered correctly numeracy q. 1	0.44	0.50	0	0	1	1359
0/1: answered correctly numeracy q. 2	0.64	0.48	0	1	1	1359
0/1: answered correctly numeracy q. 3	0.27	0.45	0	0	1	1359
0/1: Hyperbolic preferences	0.11	0.31	0	0	1	1359
0/1: Patient now, impatient later	0.31	0.46	0	0	1	1359
0/1: Kasungu is closest branch	0.35	0.48	0	0	1	1359
[MK per kg] Expected tobacco price	469.84	161.84	308	420	700	1359
Kg Tobacco expected to sell, all types	887.14	937.11	200	650	1800	1359
[1000 MK] Tobacco gross revenue, expected	273.29	291.48	42	200	611.8	1359
[1000 MK] All crops gross revenue, expected	285.65	300.93	48	200	650	1359
[1000 MK] Spent on seeds for 08/09 season	1.56	2.96	0	0.2	4.4	1359
[1000 MK] Spent on fertilizer for 08/09 season	17.35	36.31	0	2.4	49.8	1359
0/1: Main tobacco type is Burley	0.39	0.49	0	0	1	1359
0/1: Contract buyer is Alliance One	0.46	0.50	0	0	1	1359
Number of club members	15.40	7.26	10	12	26	1359
OIBM administrative records, in MK						
Deposits, pre-planting	23337.56	125000.00	0	0	40203	1354
Withdrawals, pre-planting	-22100.00	120000.00	-39000	0	0	1354
Net deposits, pre-planting	1221.03	13695.98	0	0	578.89	1354
Deposits, planting	2384.70	26404.66	0	0	8.63	1354
Withdrawals, planting	-3015.03	21501.03	0	0	0	1354
Net deposits, planting	-630.33	22436.92	0	0	5.66	1354
Follow-up survey variables, in MK						
Inputs	75859.76	152000.000	2000	45320	167000	1359
Crop sales	127000.00	234000.000	0	61000	300000	1357
Food expenditures (7-day recall)	1545.13	2487.389	250	850	3000	1353
Total expenditures (last 30 days)	12953.70	19666.005	2400	7800	28900	1353
Transfers made in last year	2459.05	6071.899	0	500	6200	1359
Transfers received in last year	4321.01	14651.312	0	1500	9000	1359

Notes: MK stands for Malawi Kwacha. Baseline survey data collected in March and April 2009 in Malawi; follow-up survey data was collected in August and September 2010. Asset index is a variable created by principal component analysis based on indicators for the household ownership of 18 common types of non-financial, non-livestock assets. Livestock index is created by principal component analysis based on indicators for the household ownership of 7 common types of livestock.

Table 2: Impact of treatments on deposits, withdrawals, and net deposits

Dependent variable:	Deposits, pre-planting	Withdrawals, pre-planting	Net deposits, pre-planting	Deposits, planting	Withdrawals, planting	Net deposits, planting
Treatment: ord. + commitment	23,102.11***	-21,818.21***	1,283.89	143.33	-3,943.73*	-3,800.40**
	(7,196.62)	(6,910.59)	(1,171.35)	(2,092.88)	(2,166.23)	(1,840.65)
Treatment: ordinary	13,035.43*	-13,017.67*	17.77	-2,031.53	-539.96	-2,571.49
	(7,217.46)	(6,821.96)	(876.05)	(1,854.37)	(1,055.00)	(1,738.66)
Stratification cell fixed effects	Y	Y	Y	Y	Y	Y
Baseline controls	Y	Y	Y	Y	Y	Y
Observations	1,354	1,354	1,354	1,354	1,354	1,354
R-squared	0.262	0.262	0.091	0.068	0.148	0.046
P-value of F-test: treatment effects identical	0.235	0.286	0.166	0.080	0.047	0.188
Mean of dependent variable in control group	5,509.59	-4,712.02	797.57	2,930.53	-1,347.34	1,583.19

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors (clustered by club) in parentheses. Each column is a separate regression of dependent variable on indicator for given treatment. Dependent variables all in Malawi Kwacha (MK145/USD). Pre-planting period is March to October 2009. Planting period is November 2009 to April 2010. Baseline controls are: household size, dummy if responent is female, dummy if head of household is female, dummy if respondent is married, a set of dummies for 12 age categories, a set of dummies for 5 education categories, asset index (principal components of 18 different non-financial, non-livestock assets), livestock index (principal components of 7 types of livestock), household cash holdings at baseline, dummy if respondent had formal bank account, amount of total formal savings, years of experience in growing the primary cash crop, dummy if reports always taking risks, dummies that indicate whether three numeracy questions were answered correctly, dummies for "impatient now, patient later" and "patient now, impatient later", dummy if closest branch is Kasungu, expected price of primary cash crop, expected kg harvest of primary cash crop, expected gross revenue from primary cash crop, expected gross revenue from all crops, expenditures on seed, expenditures on fertilizer.

Table 3: Impact of treatments on inputs, crop sales, and food expenditures

Dependent variable:	Inputs (MK)	Crop sales (MK)	Food expenditures (7-day recall)	Total expenditures (last 30 days)
Treatment: ord. + commitment	27,419.61**	27,613.81*	320.81**	2,968.41*
	(13,542.86)	(15,715.19)	(144.94)	(1,561.20)
Treatment: ordinary	9,040.62	960.95	207.40	489.05
	(6,780.51)	(14,063.88)	(161.65)	(986.27)
Stratification cell fixed effects	Y	Y	Y	Y
Baseline controls	Y	Y	Y	Y
Observations	1,359	1,357	1,353	1,353
R-squared	0.291	0.430	0.103	0.112
P-value of F-test: treatment effects identical	0.133	0.070	0.496	0.157
Mean of dependent variable in control group	56,579.96	101,926.37	1,305.37	10,978.19

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors (clustered by club) in parentheses. Each column is a separate regression of dependent variable on indicator for given treatment. Dependent variables all in Malawi Kwacha (MK145/USD). Baseline controls are: household size, dummy if responent is female, dummy if head of household is female, dummy if respondent is married, a set of dummies for 12 age categories, a set of dummies for 5 education categories, asset index (principal components of 18 different non-financial, non-livestock assets), livestock index (principal components of 7 types of livestock), household cash holdings at baseline, dummy if respondent had formal bank account, amount of total formal savings, years of experience in growing the primary cash crop, dummy if reports always taking risks, dummies that indicate whether three numeracy questions were answered correctly, dummies for "impatient now, patient later" and "patient now, impatient later", dummy if closest branch is Kasungu, expected price of primary cash crop, expected kg harvest of primary cash crop, expected gross revenue from primary cash crop, expected gross revenue from all crops, expenditures on seed, expenditures on fertilizer.