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Savings Account for Microenterprise

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Savings Accounts for Microenterprise Owners and the Implications for Microfinance

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Abstract

Will bundling savings accounts with loans increase the effectiveness of microfinance as a tool for alleviating poverty? Microfinance is the practice of offering small loans to poor people in developing countries. The development of this practice into a poverty diminishing, self-sustaining business won Muhammad Yunus a Nobel Prize in 2006. Today, there are thousands of microfinance institutions (MFIs) serving millions of people in developing countries. However, there is recent evidence that these loans do not help reduce poverty, and may do as much harm as good.

In truth, providing credit to the poor may not be enough to eliminate poverty. However the microfinance pioneered by Yunus and utilized by thousands of other MFIs is not limited to simply providing affordable credit. Other services such as business training, insurance, savings accounts, etc. are bundled with the loans. These serviced are offered because microfinance is not just about making profits, but helping pull people out of poverty. This paper looks at one of the non-credit services offered with most microloans: savings accounts. Through a study done with microenterprise owners in Kenya, this paper looks at the benefits of savings accounts to women who are ideal candidates for microfinance institutions but who are not borrowers. By looking at women who are not yet borrowers, we can see if savings accounts provide enough gain to be bundled with microloans. The goal of the paper is to examine if providing participants with that a safe place to keep their money will help them increase their overall financial resources and thus be able to invest more in their business.

The results of the study present positive and significant increases in savings account balances for the treatment group as well as improvements in the labor supply, business investment, and consumption. These results indicate that there is a demand amongst the poor for formal savings accounts and that these accounts can improve business outcomes for microenterprise owners.

I Introduction

A. Microfinance to alleviate poverty

This paper examines the issue of savings accounts for low-income microenterprise owners and its impact on poverty. Why would non-credit services, such as savings accounts, improve microfinance's impact on poverty alleviation? Looking at the issue through the lens of microfinance, an already established method for poverty alleviation, this paper examines how the introduction of savings accounts impact female microenterprise owners in Kenya.

Microfinance is the business of offering small loans to the poor (generally women) in developing countries at reasonable interest rates. The goal is that these small loans end women's dependency on parasitic loan sharks and payday lenders. As a result of this freedom, they can start or continue operating their own business and help their family escape poverty. Ever since Muhammad Yunus introduced this method in Bangladesh, many have been excited about the effect it could have on poverty elimination. Considered the pioneer of modern day microfinance, Yunus founded Grameen Bank in 1976. This once small bank in Bangladesh now has over 2,500 branches. Yunus won a Nobel Peace Prize and has published several books about microfinance. Many have followed in Yunus's footsteps, and now thousands of Microfinance Institutions (MFIs) operate in over a hundred countries. One country in which a lot of Microfinance research is conducted is India. Chakrabarti (2005) profiles the extent of MFI in India and notes that even the government of India views MFIs as promising way to fight poverty.

The methods used by MFIs vary, but most of them use the following methods. A majority of MFIs offer loans exclusively to women. Potential borrowers must form groups, usually

between five and ten members. Loans are given out to a few members of the group, but not everyone, so that only when those women repay their loans will their fellow group members be permitted to take out a loan for themselves.

In spite of all the positive attention MFIs have gotten over the years, there is very little in terms of empirical evidence that microfinance actually alleviates poverty. Especially after the financial crisis in 2008, many have questioned if giving loans to the under-qualified is pragmatic. Recently, David Roodman (2012) draws attention to the lack of evidence in his book *Due Diligence.* While his book is heavily based on his opinion itself, his criticism of Yunus's and other MFIs' use of individual success stories instead of collective data is valid. He presents cases in which microfinance worsened the under-qualified borrower's financial situation by creating a cycle of indebtedness for already struggling families. His opinion is shared by Morduch (1999) who also distrusts microfinance due to the lack of evidence of its success. Morduch particularly criticizes the techniques implemented by MFIs, such as group lending and lending primarily to women, which have not been proven successful. Morduch also doubts that MFIs can serve those in the lowest income brackets while simultaneously operating without subsidies, a legitimate criticism given many MFIs rely on charitable giving.

With the once celebrated practice of microfinance being tainted by doubt of its effectiveness, an empirical study became necessary. Banerjee, et al (2010) studied microfinance institutions in a randomized evaluation. A MFI called Spandana randomly selected fifty-two slums in India in which to open a branch. The study found no change in participants' consumption, health, education or women's empowerment, though there was an increase in new businesses owned by women. The study also found an increase in the labor supply in the short term, but the additional hours worked were not necessarily paid. What is interesting about this

study is that Spandana, like Grameen Bank, disperses loans following the group-lending model. But, unlike Grameen Bank and many other MFIs, Spandana employs a stripped down version of microfinance; meaning that no additional services are offered to borrowers such as financial training sessions or insurance. While this simplified version of microfinance, where loans are given without additional services intended to alleviate poverty, may not be effective, I propose that when coupled with other services it can pull families out of poverty.

B. Other services

Not all microcredit is the same. Here it is necessary to make a distinction between the microfinance used by Spandana in their study and the microfinance used by other MFIs such as Grameen Bank. Like Grameen Bank, Spandana used the canonical group-lending model, meaning women are sought out to take a loan even if they are not entrepreneurs (Banerjee et al. 2010). However, Spandana is primarily a lending organization and this leads to many differences in how Spandana operates compared to other MFIs. For example, Spandana, unlike Grameen, does not require borrowers to use their loan to invest in their business; instead borrowers may use their loan however they choose. But the main difference between Spandana and Grameen is that Grameen seeks to improve the prospects of borrowers by providing business training, obligatory as well as optional savings programs, and other non-credit services. If these additional services offered by Grameen Bank and many other MFIs are an essential component of MFIs, then the results from Spandana's study cannot be used as evidence of the ineffectiveness of all microfinance institutions.

Some research has been done in recent years on the best methods for microfinance. Karlan and Zinman (2008) studied credit elasticities amongst the poor in low-income countries. Potential borrowers in South Africa were offered loans with randomized interest rates and

maturities. They found that high rates proved to be less popular and have lower repayment. This may seem obvious, but little research had been done on how high rates affect poor borrowers in developing countries. They also found that the example maturity date on the loan letter strongly predicted the actual maturity date chosen by the borrower.

There is evidence that additional services in conjunction with microloans make a significant difference. McKernan (2002) examined microfinance as more than just providing credit to the poor. She measured the effectiveness of the non-credit aspects of microfinance in Bangladesh by looking at borrowers from Grameen Bank, Bangladesh Rural Advancement Committee (BRAC), and Bangladesh Rural Development Board. Using monthly profit as the indicator of success, McKernan finds that the non-credit programs such as vocational training, social development programs, the group lending model, etc. positively affect the microcredit program's success. While it is evident that bundling microfinance with other services is better for poverty alleviation than only providing credit, this study does not evaluate which non-credit programs are the most effective. Since these non-credit programs are expensive to administer, it is necessary to evaluate which have the largest positive impact on borrowers. Additionally, programs that improve MFIs' client retention and repayment rates would be more likely to be adopted, thus evaluating programs' impact on those areas is also important.

C. Savings

One service excluded from the Spandana study but present in many MFIs is savings. This paper examines how savings impacts microenterprise owners. The data used is from a field experiment in Western Kenya that was published in *The American Economic Journal: Applied Economics* in 2009. Because the researchers published their data sets, I was able to use this data to run the regressions used in this paper. The sample I used is comprised exclusively of female

market vendors. The experiment is not specific to microfinance borrowers, although some of the participants had taken out loans. The goal is to find out if microenterprise owners benefit from a formal savings account.

Continually, this paper relates savings accounts back to microfinance. The reason for this is not only that microfinance is a promising way to relieve poverty, but also formal financial institutions are expensive to operate. While some MFIs rely on charitable giving, others have followed in the footsteps of their borrowers and ended reliance on charity. Savings accounts have the best chance of becoming widespread in developing countries if they're bundled with a self-sufficient business. Many MFIs already have formal savings accounts for their clients. Grameen Bank, Bangladesh Rural Advancement Committee (BRAC), FINCA, Accion and many other MFIs encourage borrowers to increase their savings. Some of these organizations, such as BRAC, attempt to facilitate collecting savings deposits from borrowers[1]. For other MFIs, such as Grameen, there are both obligatory and voluntary savings programs for borrowers[2].

Entrepreneurs in low-income countries should benefit greatly from accumulating savings. Savings would help finance business investments and provide protection from unforeseen shocks**.** However, formal savings institutions are scarce in many developing countries. One way to increase the presence of savings institutions in the developing world would be to bundle them with MFIs. There is evidence that promoting microfinance borrowers to accumulate savings is fiscally beneficial to MFIs. In Guatemala, Atkinson, et al. (2013) studied how savings would affect borrowers. Savings accounts were not required of borrowers, however they reminded borrowers to save when they made loan payments. This increased the amount saved by those

[1] http://microfinance.brac.net/our-services
[2] http://www.grameen-info.org/index.php?option=com_content&task=view&id=28&Itemid=108

who had a savings account. The study found that those with savings made withdrawals to aid with external shocks unrelated to the timing of loan payments. Even though savings were not regularly used to supplement a loan payment, those with higher savings had better loan repayment rates indicating that contributing money to savings did not detract from loan payments but had the opposite effect. There was also a negative correlation between savings and repayment problems and clients with larger savings were more likely to renew their loans. So while formal financial institutions could be costly for MFIs to maintain, the increased retention and renewal rates may offset the cost. The article then goes to show theoretically that a combination of debt and self-commitment savings can help prevent people from succumbing to a debt-financed equilibrium.

There is doubt that it is possible for the poor to save more since all of their income is tied up in necessary expenses. However, De Mel et al. (2013) examined how regular visits from bank agents encourage the poor to save more in Sri Lanka. Not only did saving increase, they found that formal savings are additional, meaning that an increase in formal savings does not represent a shift from informal to formal savings. Therefore encouraging the poor to save with formal bank accounts can increase their total financial resources.

In addition to improving loan repayment, increased savings can improve on indicators used to evaluate the success of microloans, such as increased income. Schaener (2013) found that temporary interest rate subsidies on individual savings accounts lead to significantly higher total income and assets over 2.5 years *after* the subsidies expired. This increase in income and assets was almost entirely due to increased entrepreneurship. These results are particularly relevant to this study because the experiment was conducted in the same Kenyan province where the data used in this paper was collected.

II Experimental Design and Background

A. Background of Study

The data used in this paper is from a field study conducted in Western Kenya, specifically in and around Bumala Town in Busia district, Kenya. Pascaline Dupas of Stanford University and Jonathon Robinson of University of California Santa Cruz conducted the study from 2006-2009. Their findings and data were published in *The American Economic Journal: Applied Economics* in 2009. The data was collected in three waves, each one-year long. The data used in this paper consists of background data collected at the baseline, bank transaction records from the village bank, and logbooks kept by respondents. The study was done in partnership with a village bank.

The village in this study was the only financial institution in the study area. Formal savings institutions in Kenya and many other low-income countries are very different from those in high-income countries. Banks are uncommon in rural Kenya, so savings accounts come with high fees and a high minimum balances while paying no interest. These banks are not very popular, before the study only 0.5% of daily income earners around the study area had opened an account at this bank. Fortunately, banking in Kenya has evolved since the time of this study and now most banks offer accounts with low fees (Schaner 2013).

Most people in rural Kenya did not have formal savings at the time of this study. Only 2.2 percent of those surveyed in this study had a savings account with a commercial bank. One of the reasons for this is rural households' low level of trust in financial institutions, particularly non-regulated ones like the village bank in this study (Dupas 2012). Instead of using a traditional savings account with high fees, many use Rotating Savings and Credit Associations (ROSCAs).

ROSCAs are savings clubs that have regular meetings where members make contributions to a shared savings pool and this money is given to one member every period (Anderson 2002). These informal savings clubs have high participation, 84% of women in this study had made a ROSCA contribution in the year prior to the study.

B. Details of Intervention & its Expected Effects

The study was done in collaboration with a village bank in Bumala Town. Those randomly selected to be in the treatment group were offered an account at the village bank at no cost (normally this bank charges Ksh 450 or US$6.40 to open an account) and were provided with the minimum balance of Ksh 100 (US$1.43) in their account that could not be withdrawn. The savings account paid no interest and had withdrawal fees from US$0.50 to$1.50 depending on the amount withdrawn. There were no fees to make a deposit or any monthly fees.

The expectation was that some microenterprise owners would refuse the offer of a formal savings account. Although the researchers covered a majority of the costs, participants still had to pay withdrawal fees. Therefore, participants would only use their accounts if the cost of saving at home was greater than using the bank. For those who used the savings accounts, the hope was that having a safe place to keep their money would help them increase their overall financial resources. With more resources, the participants would be able to invest more in their business.

C. Sample and Data

Participants took a background survey at the beginning of the experiment, which includes age, marital status, ability to read, average ROSCA contribution, etc. Additionally, the village bank provided data on every deposit and withdrawal made on the treatment accounts. The last

source of data was logbooks that the participants filled out themselves. These logbooks provided data on income, expenditure, labor and other variables.

Although both men and women were included in the original experiment, this paper exclusively looks at the data collected on female market vendors. The reason for this is that there was high attrition among men, which led to significant differences between the men in the treatment and control groups. Also, men were more likely to refuse to fill a logbook (17%), and these logbooks provided data that was crucial to the regressions. Additionally, women deposited more money than men. Finally, many microfinance institutions work exclusively with female borrowers, so although most women in this experiment had not taken out a microloan, by only examining women the results are more comparable to studies conducted by MFIs. After the elimination of men from the sample frame, the sample discussed in this paper is of 262 female market vendors.

III Methodology

The goal of this study is to prove whether or not savings accounts benefit female microenterprise owners. To measure how beneficial savings are to participants, this paper looks at the result through a microfinance lens. So the emphasis is placed on the effects on business investments and consumption as indicators of poverty mitigation. Also included as a measure of success is hours worked, which shows an investment of time in the business.

Basic Model:

In order to estimate the impact of the savings account on labor, business investment and consumption, I used the following model. The regression was run on three samples, Sampled for Treatment, Offered Account, and Used Account. A total of 130 women were randomly selected

to be in the treatment group, yet 26 were not offered the account because they could not be located. As a result, the Sampled for Treatment group includes everyone randomly selected to be offered a savings account, while the Offered Account group excludes those 26 women who were never offered an account. The Used Account category is limited to only those in the treatment group who made at least one transaction in their savings account. As we narrow down our sample size by going through these categories, we get data that better represents the impact of the savings account, however the smaller sample sizes make it more difficult to have significance. An interaction term was also included that is the same criteria as Used Account but does not decrease the sample size. It was decided to include both the interaction term as well as the two smaller samples that eliminate those who do not meet the Offered Account and Used Account criteria. The reason for this is that the treatment term is less likely to be significant when the sample size is reduced, so a significant treatment term in the last or second to last column is noteworthy.

Table 1 shows how savings accounts impact different dependent variables using the following equation:

$$Y_{iT} = \beta_0 + \beta_1 T_{it} + \beta_2 Year_{it} + x'_i\delta + \varepsilon_{it}$$

where Y_{iT} represents an outcome for person i in year t, T_{it} represents a dummy variable that equals one if the participant is assigned to the treatment group, $Year_{it}$ represents the year in which the participant was a part of the study, x_i is a vector of additional controls which are as follows: age, a dummy equaling one if the participant is married, a dummy equaling one if the participant can read, percentage of log book completed, the logarithm of contributions made to ROSCA the year prior to the study, the logarithm of the value of animals owned prior to the study.

In addition, the model includes an interaction term between treatment and a dummy variable for if the participant used the account (more than one transaction). When we add the interaction term the equation is:

$$Y_{iT} = \beta_0 + \beta_1 T_{it} + \lambda T_{it} * Z_i + \beta_2 Year_{it} + x'_i\delta + \varepsilon_{it}$$

where Z_i is a dummy equal to one the participant never made a transaction and zero if the participant made more than one transaction. As a result of this interaction term, the treatment independent variable reflects only the results for women who actively used their savings accounts. This allows us to see the effect on women who are active without lowering our sample size. On the tables, there are two sub columns beneath each dependent variable, one of which excludes the interaction term while the other includes the term. More detailed read-outs from the regressions are available in the appendix.

IV Results

A. Take up

A total of 104 women were offered a savings account. Of those 89 (86%) opened an account and 57 (64%) of those who opened an account made at least one deposit. That 64% of women who are willing contribute money to a savings account that does not offer interest and charges withdrawal fees shows that there is demand for women to have a safe place to save their money. While some women did not use their accounts, or used them only a few times, many women used them frequently and made large deposits. Figure 1 shows the number of transactions by all women in the treatment group. The average number of transactions for those in the treatment group is 3.9. Deposit amounts were anywhere from 0 to 93100 Ksh. Figure 2

shows the number of transactions of women who were active in using their accounts, active is defined as having made more than one transaction. The mean savings account balance for women who were active is 17.91 Ksh.

Figure 1: Number of Transactions by women in treatment group

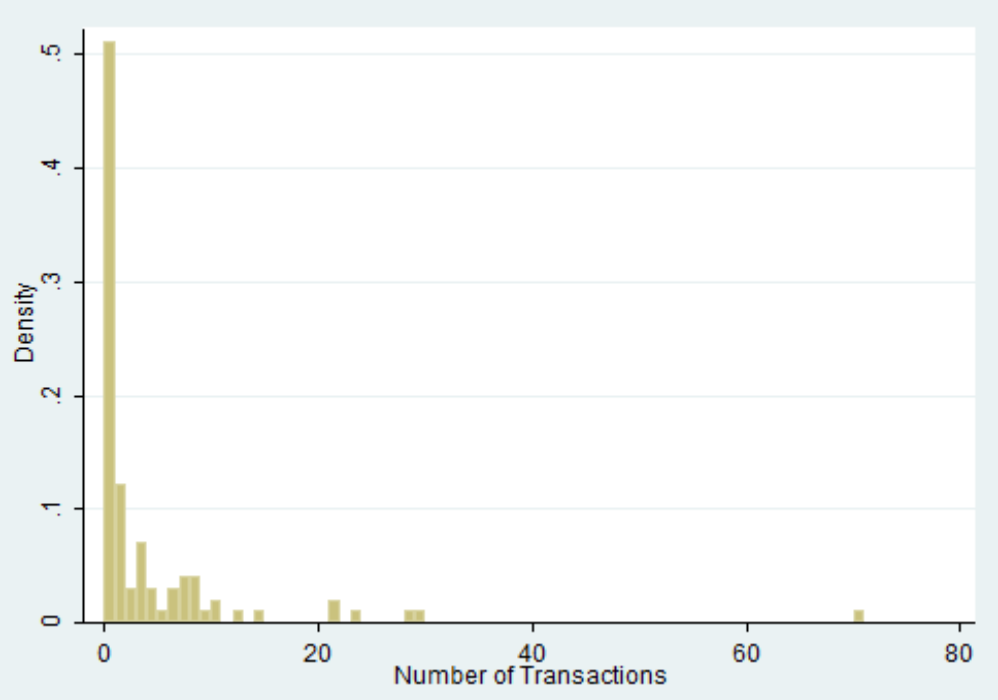
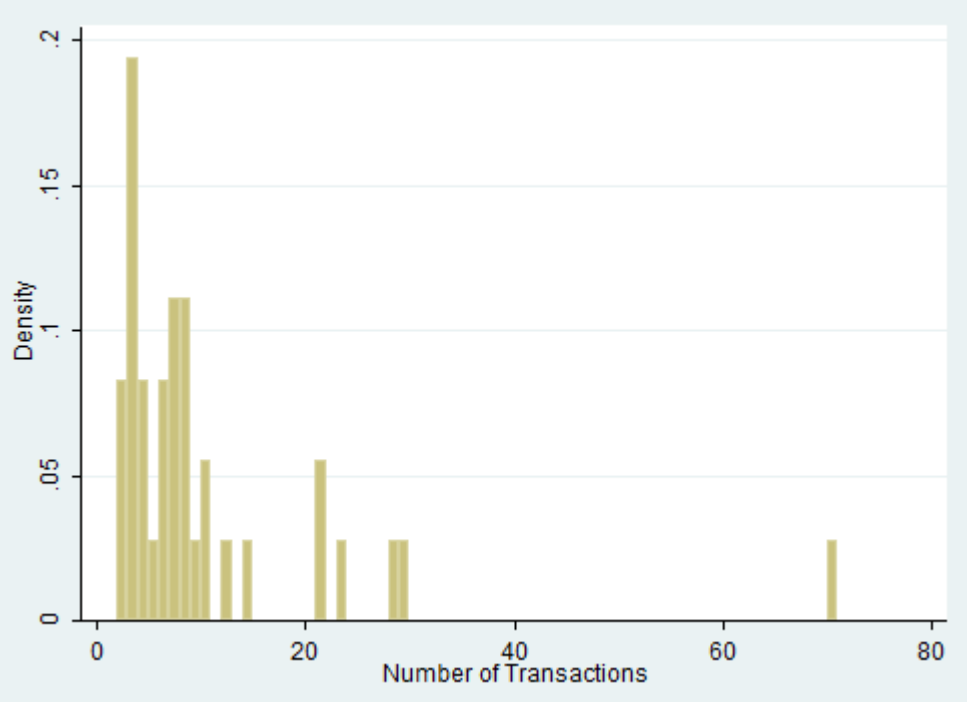


Figure 2: Number of transaction by women who actively used account



B. Impacts

Savings

Table 1 exhibits the impact on participants' savings account balances at the end of the study. The first column shows the effect on the savings account opened by participants in the treatment group; the second column shows the impact on the treatment group's animal savings, the average daily purchases of animals; and the third column shows the average daily amount contributed to ROSCA (Rotating Savings and Credit Associations), as reported by the logbooks. These last two dependent variables were included to measure whether the amount contributed to formal savings was additive or was taken from former savings sources. The columns are then divided into two sub-columns. The first sub-column, "No Active Term" follows the original regression with the independent variables as follows: age, a dummy equaling one if the

participant is married, a dummy equaling one is the participant can read, percentage of log book completed, the log of contributions made to ROSCA in the year prior to the study, the log of the value of animals owned prior to the study. In the second sub-column, the same independent variables are used and there is also an additional interactive term between treatment and inactive. In this column, the results are only for members of the treatment group who were active with their account, meaning they made more than one transaction. The rows are divided into three sample groups: Sampled for Treatment, Offered Account, and Used Account, which are explained in more detail in the above basic model section. At the bottom of each table is a list of the equations used for the Sampled for Treatment group without the interaction term. These equations show the coefficients for the other independent variables not focused on in this paper. Those coefficients that are significant are starred according to the significance scale on each table.

In all sample groups results for savings are large and significant on the 5% level. These results were expected. For Animals Savings and ROSCA, all of the results for these are positive, which indicates the formal savings account did not cause crowding out[3] of other types of savings. In fact, the amounts may have even increased; but these results are statistically insignificant.

[3] In other words, participants did not reduce savings in other areas because they were contributing to the formal savings account

Table 1 - Effect on Saving Account Balances

	Savings Account Balance		Animal Savings		ROSCA Contribution	
	No active term	Active term	No active term	Active term	No active term	Active term
Sampled for Treatment						
Observations	113	113	113	113	113	113
Coefficient	16.407	19.82	4.633	6.49	4.869	10.16
SE	(6.62)	(8.1)	(3.37)	(4.8)	(8.61)	(11.69)
t-score	2.48	2.45	1.37	1.35	0.57	0.87
p-value for overall effect	0.015**		0.172		0.573	
p-value for active users		0.016**		0.176		0.387
R-Squared	0.1969	0.2004	0.1168	0.1207	0.2715	0.2761
Offered Account						
Observations	111	111	111	111	111	111
Coefficient	16.747	19.876	4.632	6.434	4.99	10.1
SE	(6.74)	(8.12)	(3.42)	(4.76)	(8.87)	(11.72)
t-score	2.48	2.45	1.35	1.35	0.56	0.86
p-value for overall effect	0.015**		0.178		0.575	
p-value for active users		0.016**		0.18		0.391
R-Squared	0.1973	0.2004	0.1172	0.1212	0.2705	0.275
Used Account						
Observations	91		91		91	
Coefficient	20.365		6.455		7.642	
SE	(8.39)		(4.69)		(11.47)	
t-score	2.43		1.38		0.67	
p-value for overall effect	0.017**		0.172		0.507	
p-value for active users						
R-Squared	0.2272		0.1442		0.3107	

Notes: Dependent variables are average daily amounts expressed in Ksh. The "Active Term" columns include an interaction term between "treatment" and "inactive" so results are only for active account users. A more detailed read out of results is located in the appendix

*significant at 10% level

**significant at 5% level

***significant at 1% level

Estimated Equations for Sampled for Treatment group without active term

*Savings Account Balance = -13.252 + 16.407**Treatment - 30.042**wave2 - 36.48**wave3 + 15.5married - 0.245age - 10.453literate + 22.21filled_log - 1.278ln(ROSCA) + 4.341*ln(animals)*

*Animal Savings = -17.129 + 4.633Treatment – 8.49wave2 – 11.163wave3 – 2.174married - 0.123age + 2.173literate – 0.535filled_log + 1.154ln(ROSCA) + 3.406*ln(animals)*

*ROSCA Contribution = -63.512 + 4.869Treatment – 45.03wave2 – 44.6wave3 – 13.011married - 0.23age + 14.41*literate – 35.18filled_log + 18.329***ln(ROSCA) + 3.391ln(animals)*

Consumption

Table 2 shows the impact expenditure. There is an increase in total expenditure that is large and significant at least at the 10% level in all three samples. With the inclusion of the interactive term, the results become larger and significant at the 5% level. These results are encouraging since the goal of poverty eliminating initiatives, such as microfinance, are to not only to pull participating families out of poverty, but also to increase consumption to stimulate the economy of the region. Savings accounts appear to encourage consumption for participating women, allowing them to patronize other local enterprises. Food expenditure is also relatively large, positive and significant at the 5% level in all sample groups. This is promising because it means women are not cutting back on food to finance their increased business investment. Private expenditure, which includes non-durables such as meals in restaurants, sodas, alcohol, cigarettes, own clothing, haircuts and entertainment expenses (Dupas 2013), was positive but small and only significant on the 10% level when active users were considered. This category may be small because this study is only in the short run. If savings accounts are increasing the amount of money women have to spend, then it appears that women are not spending additional money on luxury goods. Instead they are spending that money on food and business investment in the short run. If we had data available in the long run, we may see increased expenditure on luxury goods as incomes increase. But the positive, albeit insignificant, coefficients for private expenditure indicate that women are not cutting back on private expenses with the addition of savings accounts.

Table 2 - Effect on Expenditure

	Daily Total Expenditure		Daily Food Expenditure		Daily Private Expenditure	
	No active term	Active term	No active term	Active term	No active term	Active term
Sampled for Treatment						
Observations	113	113	113	113	113	113
Coefficient	41.194	64.41	23.259	30.978	5.532	10.18
SE	(23.69)	(31.28)	(10.34)	(14.57)	(4.35)	(5.24)
t-score	1.74	2.06	2.25	2.13	1.27	1.94
p-value for overall effect	0.085*		0.027**		0.206	
p-value for active users		0.042**		0.036**		0.055*
R-squared	0.3587	0.3675	0.3172	0.3231	0.3550	0.3662
Offered Account						
Observations	111	111	111	111	111	111
Coefficient	41.683	64.079	23.349	30.727	5.897	10.211
SE	(24.22)	(31.28)	(10.5)	(14.56)	(4.47)	(5.24)
t-score	1.72	2.05	2.22	2.11	1.32	1.95
p-value for overall effect	0.088*		0.028**		0.190	
p-value for active users		0.043**		0.037**		0.054*
R-squared	0.3587	0.3674	0.3197	0.3255	0.3534	0.3638
Used Account						
Observations	91		91		91	
Coefficient	57.647		28.848		9.299	
SE	(30.34)		(14.461)		(5.11)	
t-score	1.90		1.99		1.82	
p-value for overall effect	0.061*		0.049**		0.072*	
p-value for active users						
R-squared	0.3957		0.3417		0.4282	

Notes: see table 1 notes

*significant at 10% level

**significant at 5% level

***significant at 1% level

Estimated Equations for Sampled for Treatment group without active term
*Private Expenditure = -39.45 + 5.532Treatment – 11.409wave2 – 12.404wave3 – 20.416***married - 0.614**age + 14.324***literate + 4.927filled_log + 9.625***ln(ROSCA) + 2.411ln(animals)*
*Food Expenditure = -53.031 + 23.26**Treatment – 62.876**wave2 – 54.69**wave3 – 13.917married - 0.687age + 30.637**literate – 12.924filled_log + 18.173***ln(ROSCA) + 8.846**ln(animals)*
*Total Expenditure = -289.784 + 41.194*Treatment – 138**wave2 – 137.792**wave3 – 58.694**married – 2.375*age + 78.01*literate + 104.815filled_log + 49.719***ln(ROSCA) + 21.151**ln(animals)*

Business Investments

Labor:

Table 3 shows the impacts of savings accounts on total hours worked by participants and the rest of the business outcomes. I chose to look at the total hours worked to see if having a savings account increased participants' investment of time in their business. An increase in hours worked also indicates an increase in the labor supply for the country, which would have positive effects on poverty on a macro scale. In the Sampled for Treatment group, there is a small increase in the number of hours worked that is significant at the 10% level. While the coefficients are less than one, note that the dependent variable is measured in hours. Thus for the Sampled for Treatment group, participants increase the hours they worked in a day by almost one hour. When only looking at the result with the interaction term, total hours worked is significant for those who were offered the account as well.

Business investment:

The coefficients for business investment are large and positive but insignificant until the data is trimmed[4]. The addition of the active interaction term improves the significance of both trimmed and untrimmed investment. When business investment is trimmed at 5%, the results become significant with the interaction term. Without the interaction term the significance hovers at just above 11% in the first two sample groups and drops to 7% in the final sample group. The amounts are very large and positive and significant on the 5% level for the first two sample groups, and significant on the 10% level for the smallest sample group. The size of the

[4] When data is trimmed it means I excluded some of the more extreme values, or outliers. I trimmed at 5%, so I used the data from the 2.5% to 97.5% range. Both business investment and revenues were reported with and without trimming.

Table 3 - Effect on Business Investment

	Total Hours Worked		Business Investment		Business Investment 5%	
	No active term	Active term	No active term	Active term	No active term	Active term
Sampled for Treatment						
Observations	113	113	113	113	113	113
Coefficient	0.967	0.97	182.716	257.113	138.884	163.685
SE	(0.54)	(.54)	(175.16)	(194.8)	(87.6)	(75.73)
t-score	1.79	1.80	1.04	1.32	1.59	2.16
p-value for overall effect	0.077*		0.299		0.116	
p-value for active users		0.077*		0.19		0.033**
R-squared	0.3083	0.3083	0.1807	0.1835	0.1848	0.1866
Offered Account						
Observations	111	111	111	111	111	111
Coefficient	0.811	.893	193.108	258.321	148.528	165.795
SE	(0.50)	(.53)	(181.96)	(195.11)	(93.13)	(76.83)
t-score	1.62	1.68	1.06	1.32	1.59	2.16
p-value for overall effect	0.109		0.291		0.114	
p-value for active users		0.096*		0.189		0.033**
R-squared	0.3349	0.3353	0.1817	0.184	0.1908	0.1917
Used Account						
Observations	91		91		91	
Coefficient	0.812		190.532		133.619	
SE	(0.526)		(182.78)		(72.748)	
t-score	1.54		1.04		1.84	
p-value for overall effect	0.126		0.3		0.07*	
p-value for active users						
R-squared	0.3293		0.2407		0.3106	

Notes: see table 1 notes

*significant at 10% level

**significant at 5% level

***significant at 1% level

Estimated Equations for Sampled for Treatment group without active term

*Total Hours = 1.735 + .9667*Treatment – 0.063wave2 – 1.438wave3 – 1.55**married - 0.04age + 2.015***literate – 3.367filled_log + .366ln(ROSCA) – 0.077ln(animals)*
*Investment = -1552.689 + 182.717Treatment – 434.107wave2 – 464.324wave3 – 255.675married – 4.343age + 400.689**literate – 733.987filled_log + 223.102**ln(ROSCA) – 57.691ln(animals)*
*Investment 5% trim = -552.358 + 138.884Treatment – 70.026wave2 – 81.638wave3 – 16.424married – 1.242age + 218.307***literate + 551.861*filled_log + 55.456*ln(ROSCA) + 29.434ln(animals)*

coefficients is particularly promising, especially since trimming the data reduces the coefficient of treatment (indicating the highest values for investment are in the treatment group), yet it is still large. These results indicate that the savings accounts significantly improve women's capability to invest in their business.

Business Revenues

Table 4 shows the outcomes for business revenue. Business revenues were self-reported through the logbooks. Unfortunately, many respondents did not keep records of their daily sales, since that would have been tedious for many business owners. As a result, the revenues reported are smaller than many of the amounts reported for investment, which would suggest those in the treatment groups saw reduced profits. This result is implausible, so it would seem the revenues were underreported and the results are unreliable. In spite of underreporting, all coefficients were positive and there were positive and significant results when the data was trimmed at 5%. Many microfinance institutions look at business revenues as an indicator of the success of their intervention. Ideally, in a study where participants had more motivation to keep records or were provided with an easier method of recording transactions, we would have reliable data showing the impact of savings accounts on business revenues.

Table 4 - Effect on Business Revenues

	Business Revenues		Business Revenues 5%	
	No active term	Active term	No active term	Active term
Sampled for Treatment				
Observations	113	113	113	113
Coefficient	99.372	117.367	99.156	123.605
SE	(166.13)	(152.56)	(54.28)	(60.99)
t-score	0.60	0.77	1.83	2.03
p-value for overall effect	.551		0.071*	
p-value for active users		0.443		0.045**
R-squared	0.1784	0.1786	0.2617	0.2649
Offered Account				
Observations	111	111	111	111
Coefficient	112.693	120.708	106.005	124.994
SE	(174.42)	(153.92)	(56.95)	(61.33)
t-score	0.65	0.78	1.86	2.04
p-value for overall effect	0.52		0.066*	
p-value for active users		0.435		0.044**
R-squared	0.1794	0.1795	0.2662	0.2683
Used Account				
Observations	91		91	
Coefficient	53.337		111.6	
SE	(145.28)		(60)	
t-score	0.37		1.86	
p-value for overall effect	0.714		0.067*	
p-value for active users				
R-squared	0.261		0.322	

Notes: see table 1 notes

*significant at 10% level

**significant at 5% level

***significant at 1% level

Estimated Equations for Sampled for Treatment group without active term
*Revenues = -1816.031 + 99.371Treatment – 38.942wave2 – 100.44wave3 – 160.136married + 6.604age + 378.826***literate + 624.256filled_log + 239.914ln(ROSCA) – 84.635ln(animals)*
*Revenues 5% = -716.087 + 99.156Treatment + 15.327wave2 – 56.096wave3 – 57.472married – 0.197age + 188.33literate +347.265filled_log + 79.868***ln(ROSCA) – 15.282*ln(animals)*

V Conclusion

A. Findings in Brief

While it would appear from other studies that providing loans to the poor is not enough to eliminate poverty, the inclusion of non-credit services does have a positive impact. This project finds that savings accounts have a positive and significant impact on several of the economic indicators used to evaluate the effectiveness of microfinance. Savings account balances went up without detracting from other informal savings sources, which is consistent with the findings from De Mel et al. (2013). There is a positive and significant correlation between savings accounts and the labor supply, business investment (trimmed), total expenditure, and food expenditure. Many of the results are weakly significant (meaning only significant at 10%), possibly with a larger sample size these results would be more significant. The most significant change is in participants' expenditure, both total and on food. The increase in expenditure is an auspicious sign since it reflects not only that participants are able to afford to buy more, but because they are spending money in their town, they are stimulating their economy. Microfinance aims to not only pull individuals out of poverty, but entire villages as well. There are also promising results for business investment when the data is trimmed at 5%, indicating that even though savings accounts provide no interest, the use of these accounts is helping savers invest in their businesses. The addition of the interaction term allows us to see what the effect is for those who are active. In almost every area, the results for this term were more significant than the results for everyone in the treatment group. Savings accounts will not necessarily help everyone to whom an account is given, but the benefits are more acute for those who actively use their accounts. The study also indicates there is a high demand for savings accounts, since 64%

of women actively used their savings accounts that offered negative real interest rates and withdrawal fees.

The improvements in business outcomes have positive implications for MFIs that utilize savings accounts. Given the sample used in this study is comprised exclusively of female microenterprise owners, the key demographic for microfinance institutions, I believe the positive results from the savings accounts can translate over to microfinance.

B. Questions and Problems

Overall there are still some problems that remain. The data available from the study limited the results. First, the sample size is relatively small. There were high levels of attrition amongst male participants, which necessitated their elimination from this paper. This led to a reduced sample size made smaller when only those who were offered an account or only those who used their accounts were considered. To remedy this, the interaction term was included, which gave us an idea of how active users were impacted without reducing the sample size. Secondly, the results are hindered by the study only measuring outcomes a year after the savings account was introduced. Long-term data may show different results including higher levels of income and assets as with Schaner (2013). We would also be able to see how many women kept up use of the savings account after the year and if inactive participants decided to become active. Finally, this study only used women who worked as market vendors. It is likely that savings accounts will have a different impact on people with different professions. Therefore the study would be improved by having additional samples of people from different occupations.

This study was also limited in that it looked at microenterprise owners and not microfinance borrowers. The study by Atkinson, et al. (2013) mentioned in the introduction

provides evidence that savings benefit microfinance borrowers in terms of loan repayment. This study shows that savings benefit female microenterprise owners (ideal candidates for microloans) in terms of consumption and labor inputs. Since savings work well with microfinance and separate from microfinance, a study should be done comparing microfinance with savings and without. By pairing savings accounts with a MFI, take up of savings accounts may improve due to the reliable reputation of the MFI.

C. Discussion and Going Forward

This study looked at only one non-credit service used in conjunction with loans by many MFIs. Other services have been evaluated. For example, Karlan and Valdivia (2011) examined the addition of business training by offering a series of entrepreneurship training sessions over the course of one to two years to borrowers in Peru. While there was no evidence it is effective in improving business outcomes, they found that the training improved the MFI's retention of borrowers, and the additional revenue offset the cost of the training sessions. Cole, Sampson and Zia (2011) tried something similar in Indonesia, however they only offered two training sessions. They found there was high demand for these training sessions, but also saw no changes in borrowers' financial behavior. The exception beings those who had no education, whose probability of opening a savings account increased by 12.3 percentage points. While these educational programs may not help improve business outcomes, the evidence shows they are cost-effective and could help bolster MFIs' savings programs as well as microloan retention.

Another service evaluated is weather insurance. Gine and Yang (2009) wanted to know if bundling weather insurance & loans impacts how many farmers take out loans for new crop

technology in Malawi. Using a sample of 800 maize and groundnut farmers, half was offered loan without insurance; the other half was offered a loan with insurance required. While loans that required insurance had less take-up, they found that farmers offered the insured loan's take-up was positively associated with a farmer's education, income, and wealth. This indicates that those who were more educated saw the benefits of having a loan with insurance. This relates back to Augsburg, et al.'s (2012) study, which showed that those already educated benefitted more from microfinance. This is further proven through Gaurav, Cole and Tobacman's study (2011) that found that when farmers in India were given training on financial management and insurance they were more likely to purchase rainfall insurance. The training even had a greater effect than a money back guarantee. In Ghana, Karlan, Osei, Osei-Akoto and Udry (2012) offered rainfall insurance to farmers at random prices. They found that farmers with weather insurance invested more in farming inputs, chiefly in chemicals, land preparation, and employees.

Going forward, there are many studies that could be done that would clarify how savings accounts should be implemented. A study where the control group is offered savings accounts while the treatment group is offered savings accounts bundled with microloans would show whether or not savings accounts have the greatest impact on poverty as a reinforcement for microloans or separate from microloans. Additionally, the non-credit services such as financial training and insurance should be evaluated individually and concurrently with microloans and with savings. The right services to offer that are cost-effective as well as beneficial to borrowers will vary based on region and borrowers. Obviously the female vendors in Kenya have little need for rainfall insurance, but may benefit from other types of insurance. Savings accounts for the poor are a promising stepping-stone for poverty alleviation. With more research, MFIs can

evaluate which non-credit programs work for their clients and hopefully take great strides towards poverty elimination.

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Appendix A

Stata Read-Outs for Table 1

Note: following results are for the Sampled for Treatment Group only

No Interaction Term:

Number of obs	113
F(9, 103)	1.23
Prob > F	0.2872
R-squared	0.1969
Root MSE	36.403

bank_savings	Coef.	Robust Std. Err.	t	P>|t|
treatment	16.40701	6.616002	2.48	0.015
wave2	-30.04188	13.18044	-2.28	0.025
wave3	-36.48036	14.56882	-2.50	0.014
bg_married	15.50032	10.27552	1.51	0.134
bg_age	-.2454207	.3600922	-0.68	0.497
bg_kis_read	-10.45326	8.249864	-1.27	0.208
filled_log	22.21673	38.57125	0.58	0.566
lnrosca	-1.277607	5.19575	-0.25	0.806
lnani	4.341354	2.518785	1.72	0.088
_cons	-13.25253	35.87537	-0.37	0.713

Number of obs	113
F(9, 103)	0.71
Prob > F	0.7008
R-squared	0.1168
Root MSE	19.398

animal_sav~s	Coef.	Robust Std. Err.	t	P>|t|
treatment	4.633451	3.370874	1.37	0.172
wave2	-8.490222	10.8029	-0.79	0.434
wave3	-11.16344	10.6563	-1.05	0.297
bg_married	-2.173719	3.810049	-0.57	0.570
bg_age	-.1231104	.1476887	-0.83	0.406
bg_kis_read	2.172883	3.797193	0.57	0.568
filled_log	-.5354253	20.10858	-0.03	0.979
lnrosca	1.153632	2.537116	0.45	0.650
lnani	3.405692	1.723832	1.98	0.051
_cons	-17.12891	23.80197	-0.72	0.473

Number of obs	113
F(9, 103)	3.52
Prob > F	0.0008
R-squared	0.2715
Root MSE	46.944

rosca_cont~b	Coef.	Robust Std. Err.	t	P>|t|
treatment	4.868632	8.605546	0.57	0.573
wave2	-45.03032	31.19784	-1.44	0.152
wave3	-44.59909	32.06854	-1.39	0.167
bg_married	-13.01085	7.855664	-1.66	0.101
bg_age	-.2301859	.3217094	-0.72	0.476
bg_kis_read	14.40555	7.597595	1.90	0.061
filled_log	-35.17898	56.38835	-0.62	0.534
lnrosca	18.32928	6.066218	3.02	0.003
lnani	3.391417	3.824484	0.89	0.377
_cons	-63.51204	52.72979	-1.20	0.231

Results with interaction term:

Number of obs	113
F(10, 102)	1.13
Prob > F	0.3464
R-squared	0.2004
Root MSE	36.502

bank_savings	Coef.	Robust Std. Err.	t	P>|t|
treatment	19.81996	8.104245	2.45	0.016
inactive_t~t	-7.358558	7.617596	-0.97	0.336
wave2	-29.24438	12.9686	-2.26	0.026
wave3	-34.84881	14.22357	-2.45	0.016
bg_married	16.59478	10.35396	1.60	0.112
bg_age	-.2167907	.3563726	-0.61	0.544
bg_kis_read	-9.769966	8.383902	-1.17	0.247
filled_log	21.99254	38.20407	0.58	0.566
lnrosca	-1.4527	5.214241	-0.28	0.781
lnani	4.002204	2.483427	1.61	0.110
_cons	-12.61547	35.80291	-0.35	0.725

Number of obs	113
F(10, 102)	0.62
Prob > F	0.7898
R-squared	0.1207
Root MSE	19.449

animal_sav~s	Coef.	Robust Std. Err.	t	P>|t|
treatment	6.490004	4.768391	1.36	0.176
inactive_t~t	-4.002863	4.841768	-0.83	0.410
wave2	-8.056407	10.60444	-0.76	0.449
wave3	-10.27591	10.17311	-1.01	0.315
bg_married	-1.578361	3.77836	-0.42	0.677
bg_age	-.1075365	.1528851	-0.70	0.483
bg_kis_read	2.544578	4.06605	0.63	0.533
filled_log	-.6573829	20.23883	-0.03	0.974
lnrosca	1.058386	2.508878	0.42	0.674
lnani	3.221203	1.602073	2.01	0.047
_cons	-16.78236	23.70539	-0.71	0.481

Number of obs	113
F(10, 102)	3.15
Prob > F	0.0015
R-squared	0.2761
Root MSE	47.026

rosca_cont~b	Coef.	Robust Std. Err.	t	P>|t|
treatment	10.16469	11.69325	0.87	0.387
inactive_t~t	-11.4187	11.19446	-1.02	0.310
wave2	-43.7928	30.67062	-1.43	0.156
wave3	-42.06731	31.00503	-1.36	0.178
bg_married	-11.31251	8.380366	-1.35	0.180
bg_age	-.1857591	.3157892	-0.59	0.558
bg_kis_read	15.46586	7.966574	1.94	0.055
filled_log	-35.52688	57.48643	-0.62	0.538
lnrosca	18.05757	5.920948	3.05	0.003
lnani	2.865138	3.587888	0.80	0.426
_cons	-62.52346	54.43851	-1.15	0.253

Appendix B
Stata Read-Outs for Table 2

Note: following results are for the Sampled for Treatment Group only and are without the interaction term

```
. regress exp_total  treatment wave2 wave3 bg_married  bg_age bg_kis_read filled
> _log lnrosca lnani, robust

Linear regression                               Number of obs =     113
                                                F(  9,   103) =    6.99
                                                Prob > F      =  0.0000
                                                R-squared     =  0.3587
                                                Root MSE      =  139.09
```

exp_total	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
treatment	41.1935	23.69214	1.74	0.085	-5.794274	88.18128
wave2	-138.9989	68.89651	-2.02	0.046	-275.6389	-2.358938
wave3	-137.7917	69.09875	-1.99	0.049	-274.8328	-.750633
bg_married	-58.69422	29.56145	-1.99	0.050	-117.3224	-.0660534
bg_age	-2.374896	1.380859	-1.72	0.088	-5.113505	.363712
bg_kis_read	78.00986	30.15275	2.59	0.011	18.209	137.8107
filled_log	104.8149	122.0653	0.86	0.393	-137.2729	346.9027
lnrosca	49.71949	17.14003	2.90	0.005	15.72628	83.7127
lnani	21.15138	9.639424	2.19	0.030	2.033859	40.26891
_cons	-289.7838	167.4049	-1.73	0.086	-621.792	42.2243

```
. regress exp_food  treatment wave2 wave3 bg_married  bg_age bg_kis_read filled_
> log lnrosca lnani, robust

Linear regression                               Number of obs =     113
                                                F(  9,   103) =    4.13
                                                Prob > F      =  0.0001
                                                R-squared     =  0.3172
                                                Root MSE      =  58.13
```

exp_food	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
treatment	23.25996	10.34027	2.25	0.027	2.752464	43.76745
wave2	-62.87603	26.65658	-2.36	0.020	-115.7431	-10.00899
wave3	-54.68967	27.50016	-1.99	0.049	-109.2298	-.1495859
bg_married	-13.91748	11.26139	-1.24	0.219	-36.25179	8.416836
bg_age	-.6871238	.6131938	-1.12	0.265	-1.903249	.5290015
bg_kis_read	30.63666	13.18885	2.32	0.022	4.479681	56.79364
filled_log	-12.92352	53.22124	-0.24	0.809	-118.4753	92.62824
lnrosca	18.17302	5.914135	3.07	0.003	6.44373	29.90232
lnani	8.846034	4.448008	1.99	0.049	.0244585	17.66761
_cons	-53.03084	72.72526	-0.73	0.468	-197.2642	91.20256

```
. regress exp_tot_private  treatment wave2 wave3 bg_married  bg_age bg_kis_read
> filled_log lnrosca lnani, robust

Linear regression                               Number of obs =     113
                                                F(  9,   103) =    7.74
                                                Prob > F      =  0.0000
                                                R-squared     =  0.3550
                                                Root MSE      =   24.65
```

exp_tot_pr~e	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
treatment	5.53205	4.34961	1.27	0.206	-3.094374	14.15848
wave2	-11.4086	10.17668	-1.12	0.265	-31.59165	8.774455
wave3	-12.40435	9.894947	-1.25	0.213	-32.02864	7.219942
bg_married	-20.41599	5.612211	-3.64	0.000	-31.54649	-9.285496
bg_age	-.6144073	.2357227	-2.61	0.011	-1.081908	-.1469069
bg_kis_read	14.32389	5.296503	2.70	0.008	3.819521	24.82825
filled_log	4.926882	22.04213	0.22	0.824	-38.78849	48.64226
lnrosca	9.625337	2.407518	4.00	0.000	4.850592	14.40008
lnani	2.410585	1.863277	1.29	0.199	-1.284785	6.105956
_cons	-39.44988	32.10316	-1.23	0.222	-103.1189	24.21916

Appendix C

Stata Read-Outs for Table 3

Note: following results are for the Sampled for Treatment Group only and are without the interaction term

```
. regress total_hours  treatment wave2 wave3 bg_married  bg_age bg_kis_read fill
> ed_log lnrosca lnani, robust

Linear regression                               Number of obs =     113
                                                F(  9,   103) =    8.96
                                                Prob > F      =  0.0000
                                                R-squared     =  0.3083
                                                Root MSE      =  2.7404
```

total_hours	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
treatment	.9666416	.5416704	1.78	0.077	-.107634	2.040917
wave2	-.06261	.9764031	-0.06	0.949	-1.999075	1.873855
wave3	-1.437611	.9454808	-1.52	0.131	-3.312749	.4375273
bg_married	-1.550448	.7558224	-2.05	0.043	-3.049444	-.0514527
bg_age	-.0401948	.0279449	-1.44	0.153	-.0956168	.0152273
bg_kis_read	2.01519	.5876011	3.43	0.001	.8498214	3.180558
filled_log	3.366707	2.849782	1.18	0.240	-2.285162	9.018577
lnrosca	.3657361	.2830646	1.29	0.199	-.1956558	.9271281
lnani	-.0771552	.1701899	-0.45	0.651	-.4146868	.2603764
_cons	1.735368	3.931604	0.44	0.660	-6.062041	9.532777

```
. regress investment  treatment wave2 wave3 bg_married  bg_age bg_kis_read fille
> d_log lnrosca lnani, robust

Linear regression                               Number of obs =     113
                                                F(  9,   103) =    2.76
                                                Prob > F      =  0.0062
                                                R-squared     =  0.1807
                                                Root MSE      =  899.11
```

investment	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
treatment	182.7166	175.1639	1.04	0.299	-164.6796	530.1128
wave2	-434.1071	537.1954	-0.81	0.421	-1499.507	631.2933
wave3	-464.3244	513.6338	-0.90	0.368	-1482.996	554.3471
bg_married	-255.6748	248.7472	-1.03	0.306	-749.0061	237.6566
bg_age	4.343264	6.139241	0.71	0.481	-7.832473	16.519
bg_kis_read	400.6887	158.5886	2.53	0.013	86.16571	715.2117
filled_log	733.9872	538.0443	1.36	0.175	-333.0967	1801.071
lnrosca	223.1025	94.33495	2.37	0.020	36.0114	410.1936
lnani	-57.69055	43.11397	-1.34	0.184	-143.197	27.81584
_cons	-1552.689	642.6643	-2.42	0.017	-2827.262	-278.1156

Appendix D
Stata Read Outs for Table 4

Note: following results are for the Sampled for Treatment Group only and are without the interaction term

Linear regression

Number of obs	113
F(9, 103)	3.29
Prob > F	0.0015
R-squared	0.1784
Root MSE	764.85

revenues	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
treatment	99.37147	166.1302	0.60	0.551	-230.1087	428.8516
wave2	-38.94166	367.883	-0.11	0.916	-768.5508	690.6674
wave3	-100.4404	357.1005	-0.28	0.779	-808.6651	607.7843
bg_married	-160.1357	194.3679	-0.82	0.412	-545.6186	225.3472
bg_age	6.604184	6.279531	1.05	0.295	-5.849785	19.05815
bg_kis_read	378.8257	143.3795	2.64	0.010	94.46641	663.1851
filled_log	624.256	493.0998	1.27	0.208	-353.6912	1602.203
lnrosca	239.9139	75.06007	3.20	0.002	91.04996	388.7779
lnani	-84.63458	46.03182	-1.84	0.069	-175.9279	6.658683
_cons	-1816.031	594.7728	-3.05	0.003	-2995.623	-636.4398

Linear regression

Number of obs	113
F(9, 103)	4.08
Prob > F	0.0002
R-squared	0.2617
Root MSE	260.05

revenues_t5	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
treatment	99.1559	54.27597	1.83	0.071	-8.48768	206.7995
wave2	15.32696	98.92339	0.15	0.877	-180.8643	211.5182
wave3	-56.09585	97.71749	-0.57	0.567	-249.8954	137.7037
bg_married	-57.47239	64.96601	-0.88	0.378	-186.3171	71.37238
bg_age	-.1971172	2.213253	-0.09	0.929	-4.586583	4.192348
bg_kis_read	188.3298	56.65638	3.32	0.001	75.9652	300.6943
filled_log	347.2646	187.9155	1.85	0.067	-25.42157	719.9508
lnrosca	79.86842	27.56231	2.90	0.005	25.20509	134.5318
lnani	-15.28155	14.88103	-1.03	0.307	-44.79455	14.23146
_cons	-716.087	310.4851	-2.31	0.023	-1331.861	-100.3131