Heterogeneous Impact of Microcredit: Revisiting the Evidence from the Randomized Experiment in Hyderabad, India

Eduardo Lucio

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Eduardo Lucio

Advisor: Professor Yasuyuki Sawada

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Abstract

The study revisits the experimental data used in the paper "The Miracle of Microfinance? Evidence from a Randomized Evaluation" by Banerjee, Duflo, Glennerster, and Kinnan (2010). The analysis identifies three household types in the sample and the varying impacts of microcredit on each group. The analysis showed that even in the short-run, microcredit does affect different aspects of human development previously considered as non-responsive when sample households were analyzed as a whole. The analysis shows fragmented positive impact of microcredit to specific household types in aspects of new business creation, investment in durables, health, and women empowerment. The most disadvantaged household group in the sample benefits from microcredit with new business creation and lesser severity of sickness/accident. While the relatively better-off household groups benefit with the expansion in business and household durables spending, higher sense of financial betterment, and stronger women empowerment for education related spending. Overall and on the sub-cluster level, the evidence show no significant short-run impact on total household income, general health expenditure, overall women empowerment, and actual investments in education.

Keywords: microcredit, randomized-controlled trial

Table of Contents

Outline of Thesis

Section 1 briefly discusses the developments in microcredit since its inception. It also provides an overview of the current issues and debates surrounding microfinance program evaluation methodologies and existing empirical evidences on the effectiveness of microcredit. The section likewise presents the motivation and contribution of this study.

Section 2 presents the details of the microcredit intervention and experimental design implemented in Banerjee et.al (2010).

Section 3 reviews existing studies in microfinance program evaluation that relates the varying effects of microcredit on different borrower types. It provides a short summary of the findings for each experiment that considers heterogeneity of the microfinance client.

Section 4 discusses the procedure which the study uses for identifying the different household types in the dataset. It shows the specification and the methodology for identifying clusters in the survey and census data. Meanwhile, Section 4.1 presents and discusses the results of the clustering.

Section 5 presents the impact estimates of microcredit on the different sub-groups formed in Section 4. It starts with a description of the intent-to-treat equation to be estimated, and proceeds with the presentation and interpretation of outputs using variables reflecting the different aspects of entrepreneurial performance (Section 5.1) and the various indicators related to household income, consumption, and expenditure (Section 5.2). The discussion of results from the different equations is compared with the output of Banerjee et.al (2010).

Section 6 continuous the discussion of the intent-to-treat estimates in the previous section, but focuses more on the different areas of household well-being. Section 6.1 provides a discussion of the estimates for health related variables, while Section 6.2 shows the output for variables related to women empowerment and education.

Section 7 wraps up the findings of the whole study and provides a brief recommendation on how microcredit could be designed to address the specific needs of the different borrowers.

List of Tables and Figure

Appendix

Balancing Tables and Descriptive Statistics:

Impact Assessment Estimates:

Business Start and Performance

1. Background

Microcredit has evolved significantly since its inception more than 30 years ago. Starting as small collateral-free loans given to groups of female borrowers in a rural village in Bangladesh by Mohammad Yunus, it has now spurred global a movement -- mobilizing funds from individuals and global organizations towards a common goal of eradicating poverty. The idea of microcredit is simple and inspiring: by lending small amount of money to poor female borrowers, it empowers them, enables them to start small businesses, expand their income, and improve household's investments in health and education. The simplicity of such solution, highlighted by some anecdotal evidences of microcredit's effectiveness, created a momentum which brought private foundations, aid donors, and public sector together in supporting these institutions in providing small credits to poor households.

In the 2013 Microfinance Summit, the focus has turned into formulating strategies in broadening the reach of microfinance[1] as an inclusive and effective poverty reduction tool. The summit highlights the importance of forging public-private partnerships and strengthening collaborations between government agencies, financial regulators, and global organizations. The summit believes that microfinance institutions create an effective bridge in delivering education, health programs, and livelihood trainings to the marginalized individuals which can eventually end global poverty.

With all the hypes propelling massive efforts and support into microcredit, how effective is it in actually improving the lives of the poor? Is every dollar and time allocated for the program worth spending? Ironically, empirical evidences still lack consensus. Despite the strong support that the program receives, results from academic researches remain fragmented and polarized. These different views about the effectiveness of microcredit have consequently sparked long exchanges of ideas between researchers in the field of development economics. Among the most prominent discussions in the area is between economists who support the effectiveness of microcredit in delivering what it promised to bring, and those who believe otherwise[2].

The most popular debate perhaps is between Mark Pitt and Shahidur Khandker (Brown University and World Bank, respectively) and Jonathan Murdoch and David Roodman (New York University and Center for Global Development). In 1998, Pitt and Khandker published one of the highly cited empirical studies upholding the effectiveness of microcredit. The study, based on a quasi-experimental methodology applied in Bangladesh, shows that microcredit is effective in bringing positive impact to poor households. The paper shows that the program strongly and

[1]The term microfinance refers to a set of products and services that cater to individuals who are underserved by the traditional financial market. The more popular microfinancing tools include microcredit, microsavings, and microinsurance.

[2] Goldberg (2005), Odell (2010), and Duvendack et.al (2011) provide a comprehensive review of the different microfinance impact assessment studies available up to 2011. These papers illustrate the progression of impact evaluation approaches in the years covered, together with varying results that each study unfolds.

positively improves household income, school participation of girls, and health of children in borrowing households, especially when loans are given to women.

The validity of the results from Pitt and Khandker (1998) was questioned in Morduch (1998). Using a simpler statistical methodology applied on the same data, Morduch (1998) found insignificant effects of microcredit on poverty and other human development indicators. However, the estimates show that microcredit allows households to have better consumption smoothing.

Khandker released a follow-up study in 2003 to further strengthen the findings of Pitt and Khander (1998). Using extended dataset from the same intervention in Bangladesh, the results show stronger impacts of microcredit. Khandker (2003) concluded that for longer time periods, there is a substantial reduction in poverty rates in areas with access to microcredit.

Few years after, these three studies was jointly revisited and re-estimated in Morduch and Roodman (2009). Using the same dataset, they found weak overall impact of microcredit; undermining the foundation of the empirical evidence supporting the 'miracle' which microcredit claims to bring. The study of Roodman and Morduch suggests that although there are lots of anecdotal stories on the success of microcredit in improving the lives of the poor, there is not enough evidence to substantiate such claims. Roodman even suggests that access to microcredit to the poor should be discouraged and institutional support to microcredit institutions should be reduced. Microcredit brings similar effect as any ordinary loan. A small loan might help, but anything in excess is harmful and reduces borrower's freedom. There is no guarantee. According to Roodman, access to such service can make the already risky lives of the poor much riskier. Because of the inherent risks carried by borrowers and microcredit companies, government and development institutions should instead promote the use of other microfinancing tools such as the microsavings and microinsurance (Ramnath, 2012).

In late 2000s, a number of new procedures for microcredit impact evaluation studies have started to come up. The randomized control trials (RCTs), a method that is commonly used in medical studies, have started to be used for evaluating microcredit effectiveness. The results of these studies are mixed. Although most findings do not contradict the findings of Pitt and Khandkher (1998) and Khandker (2003), they do not strongly support them either. Most paper would suggest that microcredit positively impacts some aspects of business creation and human development, but the total effect on poverty reduction is not as 'miraculous' as normative knowledge suggests. Most empirical evidences provide no conclusive support of microcredit being the panacea for poverty, at least in the short term.

The discussion between the supporters and critics is still ongoing. But the main argument that these debates highlights is the need for a continued development in microcredit program evaluation. For the amount of support that microcredit is getting, all the hypes about its effectiveness would be better substantiated by sufficient evidence.

The paper "The Miracle of Microfinance? Evidence from a Randomized Evaluation" by Banerjee, Duflo, Glennerster, and Kinnan (2010) is one of the first microfinance impact assessment studies which use RCT methodology. It concluded that access to microcredit generally brings positive impact when introduced to the poor. Empirical evidence shows that microcredit brings positive impact on business creation and allows increase in consumption spending and investments. However, estimates from Banerjee et.al (2010) suggest that the introduction of microcredit do not provide any significant improvement in other aspects of social well-being such as women empowerment, health, and education.

This paper revisits the same set of data from Banerjee et.al (2010) and dwells further into the heterogeneous impact of microcredit. The contribution of this research comes by looking into the effect of microcredit on the different types of households within the sample. The paper augments the results of the original study by complementing existing program evaluation techniques with exploratory tools used in other disciplines. As Duvendack et.al (2011) mentions, there is still much room for exploring microfinance evaluation methodologies. Employed experimental techniques can be further enhanced by combining other quantitative and qualitative tools to gain better understanding of the underlying dynamics operating microcredit and its resulting outcomes.

It has been noted by some economists that the differences in characteristics across households could mask the treatment-effect. This research deals with this issue by partitioning observed households and classifying them into more homogeneous groupings. Through this, the paper was able to identify the differing aspects which microcredit addresses for each household type. The findings in the analysis illustrate how households respond differently with the introduction of microcredit in terms of business creation, investment and consumption behaviour, health expenditure, and education.

The results show that microcredit does create impact in some human development indicators even in the short-run. Aside from the generally positive effect on business creation and investments in household durables, estimates from the analysis show that microcredit also provides significant positive impact in other aspects of human development such as household health, time spent for leisure, and women empowerment in education related decisions. It must be noted however, that such substantial effect is fragmented and varies on each household type. Microcredit best addresses different needs for specific household types.

2. Experimental Design and the Microcredit Product[3]

The microcredit impact assessment studied by Banerjee et.al (2010) uses 52 pairs of slum areas where no existing microfinance institution is operating. These areas were considered by Spandana, a large microfinance organization, as locations where they intend to start operation. Sample areas were selected based on the criteria of having sufficient potential borrowers but with no present microcredit company covering the specific market. The matching of the 52 pairs was done based on the similarities of each slum area in terms of the per capita consumption, debt holding of households, and business ownership. Then, one area on each pair was randomly assigned in the treatment group, while the other one remains in the control group. Spandana targeted borrowers who are relatively poor, but not identified as the "poorest of the poor."

Prior to the introduction of the microcredit in treatment areas, a baseline survey was done in 2005 involving 2,440 households. The survey collected information on household characteristics, education, employment, asset ownership, business ownership and operations, borrowing, and household savings. Between 2006 and 2007, Spandana started operating in the 52 new markets under the treatment areas. Between the same periods, other microfinance companies also started offering microcredit products both in the treatment and control areas. To measure the effect of the intervention, an endline census involving 6,798 households was done in sample areas fifteen to eighteen months after the introduction of Spandana.

Similar to a traditional microcredit facility, Spandana's product was primarily targeted towards groups of 6 to 10 female borrowers within the age range of 18 to 59 years old. Borrowers must be residing in the same area for at least one year, have valid identification, and at least 80 percent of the group members are house owners. Borrowers are free to use the money in whichever way they want as long as they can ensure repayment. The initial loan size amounts to Rs. 10,000, with a typical loan term of 50 weeks, and an interest rate of 12 percent (non-declining balance). The group is qualified to avail for a second loan only after full repayment of the first loan by all members of the group. Typical loan amount for the second round of borrowing is between Rs. 10,000 to Rs. 12,000, but may reach up to Rs. 20,000.

[3] See Banerjee et.al(2010) for a more detailed description of the experiment.

3. Does Household Heterogeneity Matter?

The heterogeneity of household characteristics is implicit within any large community such as in Hyderabad, India[4]. It has been noted in some RCT-based microfinance impact evaluations that treatment effects can be different depending on the household characteristics. Microcredit evaluations of Crepon et.al (2011), Karlan and Zinman (2010), and Banerjee et.al (2010) considered the variations in household characteristics in determining the heterogeneous effect brought by microcredit. The study of Crepon et.al (2011) in rural areas of Morocco revealed that existing business owners prior to the intervention decrease their consumption of durables and non-durables as they build up their capital to further expand their business. Meanwhile, non-business owners increase spending in food and durables, while there is no discernible effect on business outcomes. Karlan and Zinman (2010) studied the effect of microcredit for previously rejected borrowers in Manila, Philippines. They estimated the varying intervention impacts conditional on the gender and income of borrowers. The results show that there is a significant increase in profits of household businesses if the borrower is a male, while there is no significant effect if the borrower is a female. In addition, they also found out that there is a larger improvement in profit for households who belong to the higher income group, than to those in the lower income group.

Banerjee et.al (2010) explored the heterogeneous impact of the microcredit in Hyderabad, India conditional on each household's existing business or their propensity to become business owner. The results show that households who are business owners increase their investments in durable goods while their consumption of non-durables did not differ. Meanwhile, for those who do not own a business but have high propensity to start a new one, access to microcredit allowed them to increase their investment in durable goods and reduce their consumption of non-durable commodities. This can be associated to the process of building up initial investment to engage in new proprietary venture. Lastly, households who are not existing business owners and have low tendency to start a business increased their consumption of non-durables. Microcredit enabled them to adjust their consumption pattern through borrowing against their future income. In all cases, welfare effect is not clear. The expansion of current business and the increase in investment in durables do not guarantee improved business profitability or sustainability. Similarly, increasing consumption today may or may not be beneficial for the household in the future.

These studies have highlighted the fact that microcredit can bring varying impacts to different borrower profile. This research extends the study of Banerjee et.al (2010). The study explores the embedded heterogeneity in the sample households through the different demographic characteristics, and assesses the magnitude of impact of microcredit for each identified subgroup.

[4] The 2011 census estimated a total population of 7,749,334 individuals residing in Hyderabad, making it the fourth most populous city in India. (http://www.censusindia.gov.in)

As mentioned by Odell (2010), though there have been vast improvements in evaluation procedures, most procedures only measure average impacts. Hence, even if the program brought positive effects to half of program recipients, but had negative impact to the other half, the average effect will most likely be insignificant. Therefore, the evaluation measures may suggest that the microfinance program is ineffective. This paper attempts to bridge such deficiency and show that the microcredit intervention does create positive welfare impact even in the short run to specific household types.

4. Partitioning and Identification of Household Grouping

Using the information collected from the baseline survey and endline census of Banerjee et.al (2010), the research attempts to identify different household groupings through an exploratory multivariate approach commonly used in identifying underlying patterns in large datasets. We apply clustering algorithm on the dataset after recognizing the similarities or dissimilarities between households. The basic objective of the cluster analysis is to form groupings by keeping observations in each group similar to each other, while keeping every group dissimilar from the other group (Sharma, 1996).

It is recognized that creating partitions using the dataset's intrinsic heterogeneity is heuristic and exploratory in nature. Consistent clusters may or may not be formed given the sample's characteristics. However, applying the procedure on a randomized experiment may provide useful information on the verification of the correctness of the sampling implementation. Assuming we can produce interpretable household groupings, then clusters in both the baseline and endline dataset must also be similarly formed. There must also be treatment-control balance in most non time-varying variables even on the sub-cluster level.

The exploratory clustering was implemented using a set of variables reflecting the household's education level, standard of living, wealth, financial stability, income source, and access to financial services. The following household head information was used: age, gender, indicator for literacy, highest academic achievement, and type of work. In addition, the following household level information were also included: number of household members, ownership of other land in the village, indicator for house ownership, latrine type, monthly expenditure, indicator for health expenditure more than Rs. 500, and access to formal savings and insurance.

Typical clustering procedure cannot analyze datasets with missing information. In the case of household surveys, missing values and responses like "refuse to answer" and "don't know" is very common. The usual solution to accommodate cluster analysis even with such problem is either to fill in the value for the missing information (imputation) or to drop the observation with missing value (marginalization) (Wagstaff, 2004). Both procedures pose some limitations for the dataset that we are using. Replacement values generated by data imputation are only as reliable as the assumptions used in creating these values. Meanwhile, marginalization is not an option

since we aim to preserve and assign each household unit in the sample into more homogenous groupings. Therefore, the research performed a clustering procedure similar to Wagstaff (2004), where it used the partially observed data to create soft constraints which enabled clustering with missing values.

We implemented the clustering by initially measuring 'distances' between each household using the set of observed characteristics in the dataset. We use the Gower's dissimilarity measure for this since it can jointly handle different types of variables, including objects with missing information.

Consider a pair of households i and j in the dataset. Each household possess a set of m selected characteristics which we decided to use for clustering. These information in the dataset were defined such that it can be categorized to either represent qualitative (binary) or quantitative (ordinal and continuous) variables. Then, for each $i, j = 1 \dots n$ and $k = 1 \dots m$, we can use the Gower's similarity measure s_{ij} to assign a pairwise distance between each household. Gower (1971) prescribed the following measure:

$$s_{ij} = \sum_{k=1}^{m} \delta_{ijk} d_{ijk} \Big/ \sum_{k=1}^{m} \delta_{ijk}$$

where

$\delta_{ijk} = 1$ if the value of the k[th] variable is observed for both pairs, and $\delta_{ijk} = 0$, otherwise (i.e. missing for at least one of the pairs).

d_{ijk} is the distance between the household i and j using the k^{th} observed characteristic, defined by:

$$d_{ijk} = \begin{cases} I(x_{ik} = x_{jk}), & if\ binary \\ 1 - \dfrac{|x_{ik} - x_{jk}|}{[\max(x_k) - \min(x_k)]}, & if\ ordinal\ or\ continuous \end{cases}$$

The resulting nxn matrix will then contain the pairwise similarity measure between households. Let $\boldsymbol{S}$ be this matrix. The Gower's dissimilarity matrix can be computed as $\boldsymbol{D}=(\mathbf{11}' - \boldsymbol{S})^{\mathbf{1/2}}$ (Pekalska and Duin 2005).[5]

After which, the identified dissimilarity matrix $\boldsymbol{D}$ was used as an input to form groupings using a specific algorithm. The paper used the Ward's linkage method[6] to create groupings. This algorithm forms clusters by initially joining two objects which least increase the group's error

[5] The transformation from similarity matrix to dissimilarity matrix before proceeding to the clustering algorithm is due primarily on the limitation of the computational software used for the analysis. Either way, the resulting clustering presented interpretable partitions.

[6] Also known as minimum-variance method or error-sum-of-squares method in some multivariate textbooks.

sum of squares. The procedure will continue joining pairs of objects and clusters until all objects are joined in one group.

To illustrate how the households are combined while minimizing the increase in the error sum of squares within the combined objects, assume we only have two clusters of households, $\boldsymbol{A}$ and $\boldsymbol{B}$ with their respective within cluster $\boldsymbol{SSE}$s :

$$\boldsymbol{SSE_a} = \sum_a \|\boldsymbol{x}_a - \overline{\boldsymbol{x}}_a\|^2 , a \in \boldsymbol{A}$$

$$\boldsymbol{SSE_b} = \sum_b \|\boldsymbol{x}_b - \overline{\boldsymbol{x}}_b\|^2, \ b \in \boldsymbol{B}$$

Combining these two clusters to form one bigger cluster, cluster $\boldsymbol{C}$, we get

$$\boldsymbol{SSE_c} = \sum_c \|\boldsymbol{x}_c - \overline{\boldsymbol{x}}_c\|^2, \ c \in \boldsymbol{C}$$

where $\overline{\boldsymbol{x}}_c = (n_A\overline{\boldsymbol{x}}_a + n_B\overline{\boldsymbol{x}}_b)/\ (n_A + n_B)$, n_i is the number of objects in cluster i.

Note that the total sum of squares from the entire household dataset is equal to the sum of squares errors once all the observations are formed in one cluster (Timm, 2002).

$$\boldsymbol{SSE} = \sum_{i=1}^{n} \|\boldsymbol{x}_i - \overline{\boldsymbol{x}}\|^2 = \boldsymbol{T}$$

By letting $\boldsymbol{SSE}_c$ be the total sum of squares, and $\boldsymbol{SSE}_a + \boldsymbol{SSE}_b$ the within cluster sum of squares, the marginal increase in the error sum of squares should not be greater than the between cluster sum of squares. The incremental between cluster sum of squares ($IBCSS$) by joining clusters $\boldsymbol{A}$ and $\boldsymbol{B}$ is:

$$IBCSS_{AB} = n_A\|\boldsymbol{x}_a - \overline{\boldsymbol{x}}_a\|^2 + n_B\|\boldsymbol{x}_b - \overline{\boldsymbol{x}}_b\|^2 = \left(\frac{n_A n_B}{n_A + n_B}\right)\|\overline{\boldsymbol{x}}_a - \overline{\boldsymbol{x}}_b\|^2$$

For the initial condition where there is only one household in each cluster, this formula becomes $d_{ab}^2/2$, or the average of the square of the pairwise distances between households a and b from the dissimilarity matrix $\boldsymbol{D}$. By combining these two most similar households in the dataset, we will have a new incremental sum of squares proximity measure $p_{ab} = d_{ab}^2/2$. Combining households $\boldsymbol{a}$ and $\boldsymbol{b}$ in one cluster will give a mean $\overline{\boldsymbol{x}}_c$.The increase in the error sum of squares from the union of these two households in one group, and its succeeding merging with other clusters, can be computed using the Lance-William formula (Timm, 2002):

$$p_{cd} = [(n_D + n_A)p_{ad} + (n_d + n_b)p_{bd} - n_d\, p_{ab}/(n_A + n_B + n_D)$$

Where, p_{ab} is the proximity measure between households *a* and *b*; *c* is the newly formed cluster after joining *a* and *b*, and p_{cd}, p_{ad}, and p_{bd} are the distances between clusters *c* and *d, a* and *d*, and *b* and *d,* respectively.

The clustering algorithm will continue merging different partitions until all the households are contained in one group. The increase in the error sum of squares as pairs of clusters are combined is illustrated in a "dendogram." The number of clusters to be retained is based on the sudden "jump" in the error sum of squares within the group after joining specific clusters.

4.1 Clustering Results

The clustering procedure was applied on both the baseline and endline datasets to compare how household groupings have changed between the fifteen to eighteen months interval of the two surveys[7]. The cluster procedure produced somewhat similar groupings between the two periods. Table A.1 to A.4 presents the descriptive statistics, treatment-control balance, and tests for dissimilarities between each of the clusters formed in the baseline survey and endline census.

Three groupings were retained for each time period. Tables A.1 and A.2 show the treatment-control balance for the entire baseline sample and endline census, and for their respective sub-clusters. We can see from the table that households from the control and treatment areas in both time periods are almost similar in most of the non-time varying characteristics. The same holds true for the treatment-control balance for each of the sub-clusters both in the baseline and endline.

Tables A.3 and A.4 display the between-cluster t-tests for the baseline and endline datasets. We see in the baseline clustering that the third cluster contains most of the households who are headed by females, and are generally older compared to the other two groups. Similarly, this group receives the most financial aid among the three clusters. In terms of educational attainment, the first and second group have higher literacy rate and completed higher grade level compared to the third group. Among all the differences, the distinguishing factor of the first cluster is it is headed by male individuals who are educated, but with low financial stability partly due to low rate of property and house ownership and are employed in less stable income sources (i.e. salary workers and casual labourers). In addition, these households contain household members who are relatively sicklier compared to the second group. The second sub-cluster of households is similar to the first in terms of the demographics, however, this group possess healthier household

[7] It could have been ideal if the dataset forms a perfect panel. If the dataset was formed in such a way, then the analysis could have proceeded by performing the clustering using the baseline data, then preserving the clustering results and matching the grouping with the exact household in the endline. With such, we can perform another exploratory clustering using the endline values and compare how households either stayed in the same group, or moved to another cluster. It would be interesting to explore and identify specific household characteristics which affect such dynamics. However, due of the adjustments done by Banerjee et.al (2010) to accommodate for the low loan take-up, the panel was not perfectly formed.

members, more stable income source (wage earners and business owners), and higher rate of ownership of houses and other land in the village.

Meanwhile, for the endline dataset, the first cluster combined the households who have almost similar profile as in the third cluster in the baseline (See Table A.4). These are female headed households, with lower level of educational training, and low level property and house ownership. The second and third clusters in the endline are mostly similar with each other in terms of demographic profile (mostly male headed households). However, the households in second sub-cluster have marginally higher index for property and house ownership compared to the third sub-cluster. Lastly, between these two groups, the second group contain households with less healthy members.

To summarize, the formed sub-clusters in the baseline survey and endline census can be generally characterized into the following descriptions: (1) households headed by educated individuals (mostly males) with less stable financial condition, and with sickly members (2) those headed by educated individuals (predominantly males as well) with financially stable condition, and relatively healthy household members and by (3) those led by older individuals with low level of literacy (mostly women) and relatively unstable income source. For the sake of convenience, we will label these groupings as educated and sickly households (thus, ES), educated and healthy households (thus, EH), and poor and low level of literacy (thus, PL) households, respectively. The household group labels for the analyses in the paper were judged mainly on the differences in the average values of the set of variables of the endline clustering.

Figure 1 and Table 1 show the distribution of the treatment and control households for each household clusters and the dendogram to visualize the aggregation of each household into different groups. The table shows an almost balanced distribution of households between the three groups both for the baseline and endline dataset. The resulting distribution is suggestive of the effectiveness of the randomization design implemented in Banerjee et.al (2010). The control and treatment groups seemed to be almost balanced in terms of number of households between all the sub-groupings.

Figure 1: Baseline and Endline Clustering

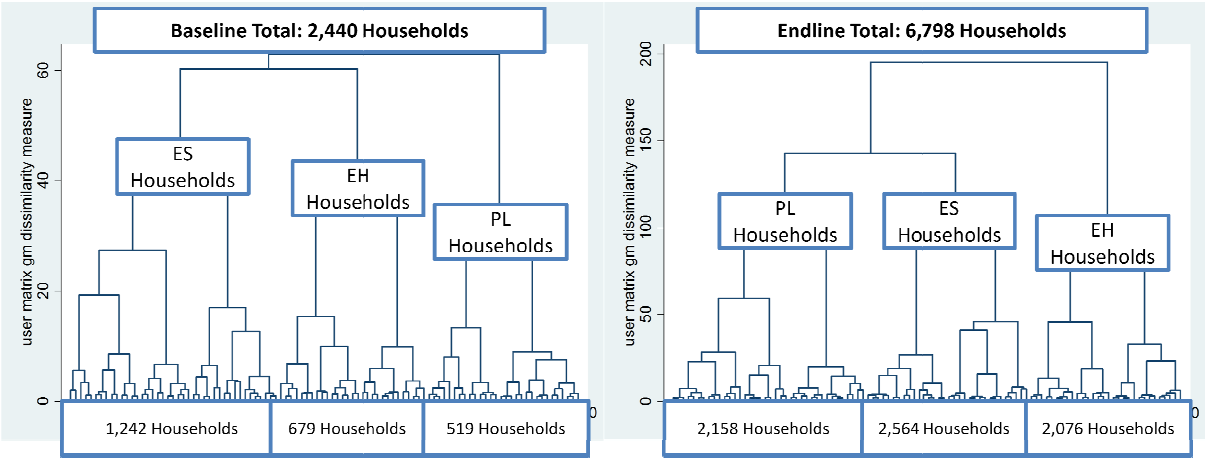

Table 1: Control-Treatment Household Distribution

Baseline Clustering			
Household Type	Control	Treatment	Total
ES Households	638	604	1,242
EH Households	321	358	679
PL Households	261	258	519
Total	1,220	1,220	2,440
Endline Clustering			
Household Type	Control	Treatment	Total
PL Households	1,035	1,123	2,158
ES Households	1,191	1,373	2,564
EH Households	1,008	1,068	2,076
Total	3,234	3,564	6,798

5. Impact Assessment on Different Household Groups

We employ a similar procedure used in Banerjee et.al (2010) in determining the varying impact of microfinance on the different household groups identified. This section compares the averages of a number of variables of interest between the treatment and control areas for each household group. We discuss the intent to treat (ITT) estimates for specific household groups, and relate these to the results of the original paper.

The estimation for the ITT is specified as follows:

$$y_{i,HHtype} = \alpha_{HHtype} + \beta_{HHtype} * Treat_{i,HHtype} + \varepsilon_{i,HHtype}$$

such that $\{PL, ES, EH\} \in HHtype$, $Treat_{i,HHtype}$ is an indicator for households residing in treated area, and β_{HHtype} is the ITT effect for each household type identified in the previous section.

It was mentioned in Banerjee et.al (2010) that the actual microcredit take-up in treatment areas was considerably low to identify plausible treatment effects. Hence, the endline sampling was adjusted such that it will accommodate more of those who have higher propensity to borrow. As a result, the Spandana borrowers were oversampled. The authors corrected this by assigning weights to adjust for the oversampling.

The estimates for the microfinance impact on the different household groups involving variables related to business, income and spending, household health, other shocks, indicators of women empowerment, and education are presented in Tables B.1 to G.2. All estimates are weighted to account for the oversampling of Spandana borrowers, and the standard errors reported are cluster-adjusted at the slum area level.

5.1 Business Start-up and Entrepreneurial Performance

Banerjee et.al (2010) estimated that over the entire sample households, those residing in treated areas are more likely to start a new business than the comparison group. However, factoring in the differences of household types, we discover that the magnitude of impact to start a business also vary for every sub-clusters. Table B.1 reveals that among the three groups, only the most disadvantaged household group receives a statistically significant impact in terms of business creation.

The PL household receives the biggest impact. Estimates report that 17.7 percent of the PL households in treatment areas opened a new business within fifteen to eighteen months after the introduction of microcredit. This is 6.6 percent higher than the rate of opening a new business in similar household type in control areas. For the ES and EH household type, although not statistically significant, the direction of estimates are also consistent. The ES household group

show that 12.7 percent of those who live in control area ventured into a new business, while the start-up rate is 1.7 percent higher in treatment area. Lastly, 12.4 percent of the EH household residing in control area reported opening a new business, while it is 2.3 percent higher for households in the treatment area.

The scale of business operation of enterprises which were not newly established can be classified into two general categories. Looking into the average values of business profit, revenue and cost, wages, employee, and inventory (Tables B.3 to B.13), it can be deduced that existing businesses operated by the ES and EH households are much larger in scale compared to those owned by the PL households. Relating this to the other aspects of business operations, the results show parallel outcomes with the original paper. Businesses which were not newly opened a year ago did not create statistically discernible impact on profitability, revenue, or total cost for all the three types of households. However, the reduction of credit constraint in treatment areas created an interesting and varying effect on the behaviour of households with existing businesses.

The general direction of the estimates in Tables B.6 to B.9 suggest that access to microcredit could have prompted the PL business owners to reduce current business spending in preparation for buying more business assets to expand the scale of operation. Wages paid by PL business owners in treatment areas were substantially lower than the comparison group (Table B.6). The average wage expenditure to non-household members were Rs.5,404 lower than the average of the control of Rs.7,200. However, the reduction in manpower may not be driven by the decline in the number of hired workers. In fact, Table B.7 shows that the manpower employed by PL type business owners does not systematically differ from the control group. It could be associated to the reason that business owners may actually be asking workers to work lesser hours. In exchange, businesses hire more casual workers (Table B.10) and owners render more of his/her personal time in lieu of the savings from the reduced wages paid to regular employees. Although, the estimates are insignificant, the most responsible person in businesses owned by PL households allot 1.27 hours more everyday and 0.22 days more for each week than in the comparison group (Table B.11 and Table B.12).

Meanwhile, larger businesses owned by ES households were enabled with the access to microcredit to invest in more business assets, thus improving the efficiency of business operations and bringing reduced cost and enhancing profitability. Table B.14 shows that ES households considerably invested in more business assets after the introduction of microcredit in the area. Such businesses purchased an average of Rs. 1,408 in productive assets compared with the Rs. 480 spending in the treatment group[8]. Further, although the estimate in Table B.3 (column 3) is not statistically significant, this additional business assets investment could have contributed to better business operation (i.e. reduced cost, Table B.5 Column 3) and driven profit to reach almost thrice than the similar household group residing in control areas. Businesses by

[8] Banerjee et.al (2010) similarly detected significant increase in overall spending for business durables for the whole sample households. They estimated a 127 percent higher business investment in treatment areas. The estimate for this paper shows that this effect is captured mainly by the businesses owned by ES households.

ES households reported an average profit of Rs. 2,914, higher by Rs. 1,885 in comparison to the average of Rs. 1,028 in the control group. This is reasonable as ES households could have been long constrained in expanding and improving their business operation caused by the immediate financing needs of its sickly members.

The outcomes for the existing business owned by EH households tell a related story. Since these households are the relatively financially unrestrained compared to the other two groups even without the microcredit, the intervention brought no substantial impact in their business operation. One interesting finding is shown in the fourth column of Tables B.9 and B.10. The additional funding opportunities brought by the intervention to the EH households allow household members to enjoy more leisure time (7.8 hours free time in a week) compared to the control group. The reduction of the rendered "free" man-hours by household members is substituted by the additional, albeit statistically insignificant, 1.6 unit of casual worker. Further, we can see from Table B.15 that EH households in treatment area significantly raise their livestock agriculture holdings. The poultry stock of EH households in treatment areas is almost twice the number of poultry in the control areas. An average of 3.4 birds is owned by such type of household with the presence of intervention, in contrast to the 1.7 birds owned by those without the presence of Spandana.

In summary, microcredit brought some positive impacts not only in business start-up, but also in business expansion, and reallocation of business resources. By household types, the microcredit prompted PL households to start a new business, ES households to augment financing source to invest in more business asset and expand existing business operations, and EH households to increase the capacity of their livestock agriculture business and allow household members to enjoy more leisure. Consistent with Banerjee et.al (2010), the welfare effect of the creation of new business and expansion of existing enterprises remain unclear in the short run. The evidence in the short run does not strongly suggest substantially stronger profitability for households with higher access to microcredit.

5.2 Income, Consumption, and Expenditure

One of the main arguments of microfinance advocates is that even through small credits, households can be lifted away from poverty. It allows them to expand their earnings by promoting self-employment, and use this to eventually augment their investments in business, health, education, and other aspects of human development. Interestingly, evidences in the short run, show a reduction in the household work earnings (Table C.1). Although the results are not statistically different from zero (as in Banerjee et.al (2010)), the direction show that the overall average work earnings are lower by 13 percent for the treatment area when benchmarked against the comparison group. On a subgroup level, it is lower by 13 percent for the PL households, 17 percent for the ES households, and 8 percent for the EH households. The estimate is insightful if

we connect these results with the previous section. We saw in Table B.9 that, among existing business owners, the intervention allowed the three groups to spend more leisure time rather than spend time working in the household business. Assuming we can generalize this to include even non-business owners, this may suggest that the availability of microcredit drove household members to work less in wage industries, involve themselves more in their own activity, or start their own business. This result is similar to the findings of Crepon et.al (2011) where they found that borrowers in sampled area Morocco tend to supply less wage labour, and instead, consume more leisure. Similarly, with the intervention, households gain more liberty with their time since they know that there is an available funding source in case of an immediate need. Looking at the fourth column of Table C.2, we also see that the presence of microcredit brings a significant increase in the sense of financial improvement especially with the EH group. The EH households feel 0.13 points financially better compared to the control group. The coefficients for the PL and ES households are likewise positive, although insignificant. Despite this, the issue of whether or not this will translate to an improved household's earnings in the long run remains unclear.

Tables C.3 to C.8 summarizes the intent to treat estimates brought by the Spandana intervention on aspects of total household spending and its subcomponents. In summary, these tables show that microcredit do not provide any significant impact in augmenting total household spending for all the three household types. The result of the analysis in this paper is consistent with Banerjee et.al (2010). They were able to find a minute and statistically insignificant increase in total per capita expenditure and spending on non-durables, but statistically significant increase in the spending for household durables. For this analysis, the estimates for total household spending, food spending, temptation goods spending, and celebration spending are all insignificant for all the three household groups. However, the model detected a small increment in the total household spending (2.9 percent, Table C.3 column 1) and decent reduction in the consumption of temptation goods[9] (9.1 percent, Table C.5 column 1) for the entire households in the treatment group. For the latter, the introduction of microcredit is often seen to act as a discipline mechanism for all the types of households (Banerjee et.al 2010).

Another interesting finding is shown in the differences in the signs of the estimates in celebration spending (Table C.6). Despite that estimates are all insignificant, the introduction of microcredit facility allowed poorer households to enjoy celebrations more. In contrast to the previous notion that treatment households are more likely to spend less on social events than households in the control group (on the average) because they tend to save more[10], the estimates here show that the behaviour depends on the initial level of household's financial capacity. The PL households can now spend 8.2 percent more for these occasions compared to their counterparts without microcredit intervention[11]. On the contrary, the signs for the ES and EH households are both

[9] "Temptation goods spending" is the computed as the sum of monthly spending for outside meals, pan, tobacco, intoxicants, lottery tickets, and gambling.
[10] Banerjee et.al (2010) and Crepon et.al (2011).
[11] It might also be important to note that a large share of female headed households is in the PL grouping. There might be causation between having a female household head and spending more with celebrations.

consistent with the previous findings. While the PL households are now "liberated" to enjoy celebrations more, the two "wealthier" households can afford celebration spending even before the intervention. Therefore, they would rather save these funds for business expansion and other productive activities.

Continuing with the other aspects of consumption, results in Table C.7 show that spending for household durables significantly increased with the intervention on the aggregate level. With the partitions in household types, we can see that among the three subgroups, the ES households receive the most impact. ES households in treatment area spend 28.9 percent more on the average than those in the control group. Household spending for such household types in the treatment group averages Rs.11,848 compared to the comparison group's average of Rs.9,214. However, there is no discernible effect for the other subgroups.

We now look into how the expansion in household spending translated to an improvement in the living standards for those with access to Spandana. This research uses two indicators in the questionnaire to reflect the living standards. Tables C.9 and C.10 show the intent to treat estimates for indicators of house waterproofing and shared latrine.[12] The results are not statistically significant in terms of total and for each identified household types. However, it is inspiring to see that all the estimates point to the same direction: the availability of microcredit improves the quality of living of the households in the area. Households living in the treatment area have higher propensity to have better waterproofed houses and have lesser tendency to use a shared latrine compared to the comparison group.

6. Impact on the Indicators of Social Well-Being

On top of the claimed impacts of microcredit in promoting entrepreneurial activities, improvements in income, and expansion in consumption levels, supporters of microcredit have long praised its ability to create ripples that benefits areas affecting human development. Among the most reputed aspects of microfinance is its ability to improve health, women empowerment, and education. These indirect impacts of microfinance to health have been noted well in a number of existing empirical researches. Assuming that microfinance is effective in increasing household income, this would create improvements in the borrower's living standards, water supply, and sanitation, and eventually translate to improvements in household health[13]. In terms of microcredit, Banerjee et.al (2010) mentions that availability of such borrowing facility relaxes the credit constraint of households, thereby allowing them to increase investment in health, household durables, and education.

[12] House waterproofing is defined as an ordinal variable: i.e. 0-house is not waterproofed, 1-Some rooms are waterproofed, 2-All rooms are waterproofed. Similarly, shared latrine is an indicator variable: 1-shared latrine, 0-otherwise. The author assumed that, everything else remaining the same, it is more hygienic to use a private latrine than a shared latrine.

[13] See Begum et.al (2000), Morduch and Haley (2002), Pitt et.al (2003)

Leatherman and Dunford (2009) believes that these indirect impacts generate positive feedbacks as well to the microfinance institution for two main reasons: First, this ensures the financial security of the household and the client, and second, it helps support the long-term viability and growth of the microfinance institutions.

6.1 Health Outcomes

Prior to the propagation of the RCT-based impact evaluation, studies supporting the microfinance's impact on health and nutrition is much lesser than the findings supporting microfinance as a tool for poverty alleviation. Although these existing evidences are few, these are generally positive (Wright 2000, Morduch and Haley 2002).

Some of the latest RCT-based impact evaluations, however, provide mix results to support such claims. For instance, Banerjee et.al (2010) showed that there is no statistically significant effect on health spending in the short-run in areas where microcredit intervention was provided. Karlan and Zinman (2010) detected both positive and negative impacts (but statistically insignificant) of microcredit on health. In particular, treated applicants expressed having "very good" health but generally higher mental stress compared to the controlled group. Meanwhile, Crepon et.al (2011) in their experiment in rural Morocco showed a plausible increase in health spending with the introduction of microcredit.

Among the three household types, only the PL and ES households possess much of the information about health events costing more than Rs. 500[14]. Tables D.1 to D.4 summarizes the results of the intent to treat estimates for health related spending and the variables suggesting the adverse effects of these health events to work and school absenteeism.

Table D.1 shows that in general, microcredit does not create impact to health related expenditures of households. The estimates for the whole group and all the three subgroups have very low statistical significance. However, for health related expenditures conditional on sickness or accident (Table D.2), we see a strong positive effect of the intervention to the PL households. The PL households in treatment area reported Rs. 1,365 lower medical expenses last year compared to the control group. If we interpret the medical cost as an indicator of the scale of the health event, then the estimates show that microcredit lessens the severity of the sickness or accident for the PL household. However, there is no statistically discernible effect for the ES group. For the entire sample, these also (weakly) translate to reduction of expenditure by an average of Rs. 353 (p-value of 0.46). The reduction in the degree of health shocks of the sickly households also translated to a slight reduction in work/school absenteeism (Table D.4). The intervention lessened the number of days missed in school or work by 3 days (p-value: 0.32) for

[14] Recall that one of the main distinguishing factors between the ES and EH household is the occurrence of health events which amounted to more than Rs.500 in the past year. Hence, the name ES: Educated and Sickly and ES: Educated and Healthy households.

the entire households, 4 days (p-value: 0.30) for the ES households, and 1 day (p-value: 0.78) for the PL households.

What drove this improvement in the health condition of the sickly households? If we look in the estimates from the previous section on consumption and expenditure (Tables C.5, C.9, and C.10), the intervention caused a slight improvement in hygiene facilities, living standards (i.e. waterproofing of houses), and reduction in the consumption of temptation goods. The improvements in these three areas may not be statistically substantial in comparison to the control group, but its impact on health, especially for the poor household, is significant.

6.2 Women Empowerment and Education

Providing women more control over household income has been found to promote more spending on education and health (Lundberg et.al 1997, Duflo 2003). The microcredit product introduced in the experiment was designed to cater primarily to female borrowers with a goal of empowering and enabling them to be more involved in household decision making. We saw in the last section that the introduction of microcredit does not impact the total household health spending for all household types. Further, despite the explicit targeting of the products towards woman, Banerjee et.al (2010) found no discernible effect on women's empowerment in the short run for all aspects of household decision making. While microcredit does not seem to strongly impact household income, the effect also remains unclear for the aspect of health, women's empowerment, and education.

Tables F.1, F.2, and G.1 to G.2 summarize the intent to treat estimates for indicators for women empowerment and education. The results in Table F.1 show the effect of microcredit on the overall household decision making[15]. Considering all the sampled households in the dataset (column 1), the estimates shows a consistent result with Banerjee et.al. (2010). The estimates do not seem to show that women in the treatment group are more empowered in terms of the overall decision making compared to the control group. Looking further into the different household types, we find more interesting findings. Among the three types of households, the relatively "well-off" EH household (Column 4) show a slight improvement in the women decision making. The estimate shows that EH households in treatment areas have 0.24 points higher (p-value: 0.19) overall decision making index compared to the control group. Meanwhile there is almost no perceptible effect for the other groups.

Another variable of interest is the indicator for women's decision making on education related spending which shows significance for the EH household (Table F.2, column 4). Women in EH households achieve greater empowerment for education related decision making with the

[15] Involves aggregating the indicators of female primary decision maker for food, education, clothing, durables, health, investments in gold and silver, and home improvement related spending.

introduction of the microcredit. However, there is still no statistically significant effect for other two subgroups and when estimated using the entire sample. The estimates for education spending and enrolment rates (Table G.1 and G.2, respectively) also show consistent values. Both indicators are relatively more significant for the EH group (column 4) in comparison to the PL and ES household. The education spending of EH household is higher by Rs. 147 in contrast to the comparison (p-value: 0.20). In a similar manner, enrolment rate is 0.06 person higher in EH household compared to the household of the same type in the control area (p-value: 0.29).

The other decision making indicators are shown in Tables F.3 to F.8. Although all the other estimates are statistically not different from zero, it is worth noting that the values for EH households are almost always positive and with decently low p-values[16]. On the contrary, PL households get most estimates with negative sign and relatively low level of significance[17].

The results are stimulating as these suggest that a higher level of financial stability, education, and more stable household health condition is imperative to create a household environment where microcredit intervention can bring better impact to women empowerment and education related indicators

[16] ES household's p-values for women's decision making: food spending - 0.45, health spending – 0.28, clothing: 0.14.
[17] PL household's p-values for women's decision making: home improvement – 0.17, and durables spending – 0.22.

7. Conclusion and Policy Recommendations

Using the experimental data from Hyderabad, India, the paper was able to identify three types of household in the sample and the corresponding impact that microcredit brings on each group. The analysis showed that even in the short-run, microcredit does affect different aspects of human development previously considered as non-responsive when sample households were analyzed as a whole. In addition, the analysis shows fragmented positive impact of microcredit to specific household types in aspects of new business creation, investment in durables, health, and women empowerment.

Poor households headed by individuals with low level of education and unstable employment benefit from microcredit by allowing them to acquire the initial capital needed to start a new business. Further, there is a substantial reduction in the sickness/accident related expenditures brought by the decline in the consumption of temptation goods and relative improvement in sanitation and living standards (i.e. shared latrine and house waterproofing) of households in treatment areas. Similarly, households who have sickly members but with educated head is benefited by microcredit by allowing them to increase their investment in household and business durables which could have not been available due to the constraints brought by the frequent sickness/accident related expenses in the family. Lastly, households who are relatively healthy and headed by an educated individual feel financially better-off and have stronger women empowerment in education related decisions. However, these do not significantly translate to an increase in household income nor to actual expansion in education related spending in the short run. Overall and on the sub-cluster level, microcredit brings no significant impact on total household income, general health expenditure, overall women empowerment, and actual investments in education in the short run.

Over the years, there have been vast developments in the design and utilization of microcredit in the market. From the traditional design of microcredit, some lending institutions have started incorporating enhancements by combining the product with health seminars, education programs, livelihood trainings, and other schemes[18]. More recently, development organizations who are targeting ultra-poor individuals apply a 'graduation' approach for poverty alleviation[19]. The 'graduation' approach combines asset-transfer programs, livelihood trainings, and other skills development seminars in jumpstarting the ultra-poor to enable them to access microcredit and eventually graduate from extreme poverty.

The results of the analysis suggest that parallel strategies may work even for borrowers who do not belong to the 'poorest-of-the-poor.' By identifying which aspects of the borrower are the

[18]For example, see Leatherman and Dunford. (2009)

[19]Ultra-poor individuals refer to those who are at the very bottom of the socioeconomic ladder. These are people who are so economically disadvantaged that even microcredit providers deem them to be too risky to be microloan clients. Organizations implementing the ultra-poor targeting programs include the Bangladesh-based BRAC (http://tup.brac.net/) and the Consultative Group to Assist the Poor (CGAP) (http://www.cgap.org/about/programs/cgap-ford-foundation-graduation-program).

most and least influenced by the microcredit, better targeting can be done to achieve stronger impacts. For instance, borrower with profiles who are most likely to start a new business be given supplementary livelihood trainings on how to make the proprietary ventures more sustainable and efficient. Similarly, existing business owners who have profiles that suggest higher tendency to expand business ventures can be offered auxiliary assistance by the microcredit institution. Microcredit companies could expand in the business of 'micro-leasing', where livelihood tools and equipment could be acquired on leasing terms, thereby promoting flexibility and enabling more efficient business operations and better profitability without the initial hurdle of large acquisition cost of business assets. Likewise, borrower types who are more likely to be empowered with education related decisions could be provided options to initiate actual investments through educational loans. As households take a 'step-up' in terms of borrowing profile, their financing needs may be changing as well. By including these different borrower characteristics in lending decisions, microcredit institutions can be more dynamic and effective in helping their clients. By offering borrowers various sets of auxiliary products through client profiling, microcredit impact could be enhanced. Additional products and services could aid where the effectiveness of traditional program lacks.

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Appendix

Table A: Balancing Tables and Descriptive Statistics

Table A.1 Baseline Balancing Table

Entire Baseline Sample	Control Mean	Treatment Mean	Diff.	Standard Error	P-value
Gender	1.19	1.19	0.00	0.0158	0.7563
Age	44.93	44.65	0.27	0.5349	0.6091
Is the Household Head Literate?	1.57	1.58	-0.01	0.0225	0.6738
Highest Grade Completed	7.79	7.71	0.09	0.1753	0.6114
Work Type	4.03	4.00	0.04	0.0643	0.5772
Financial Aid	132.01	97.16	34.85	22.6733	0.1244
Number of Household Members	5.04	5.13	-0.10	0.0699	0.1739
Other Land in City	1.93	1.91	0.02	0.0112	0.0942
Other Land in Village	1.85	1.81	0.03	0.0152	0.0395
House Ownership	1.41	1.45	-0.04	0.0375	0.2371
Monthly Expenditure	4734.69	4986.50	-251.82	166.8035	0.1313
Did the household receive any assistance from the government?	1.89	1.87	0.01	0.0132	0.3841
Subcluster 1: ES Household	**Control Mean**	**Treatment Mean**	**Diff.**	**Standard Error**	**P-value**
Gender	1.04	1.04	0.00	0.0112	0.8436
Age	42.11	42.59	-0.48	0.6971	0.4897
Is the Household Head Literate?	1.58	1.56	0.01	0.0336	0.7158
Highest Grade Completed	7.61	7.34	0.27	0.2428	0.2702
Work Type	4.18	4.18	0.00	0.0806	0.9943
Financial Aid	47.43	23.31	24.12	17.2226	0.1616
Number of Household Members	5.02	5.15	-0.13	0.0976	0.1717
Other Land in City	1.95	1.94	0.00	0.0130	0.7209
Other Land in Village	1.92	1.91	0.01	0.0158	0.6866
House Ownership	1.45	1.48	-0.03	0.0492	0.4905
Monthly Expenditure	4103.96	4468.27	-364.31	196.9372	0.0646
Did the household receive any assistance from the government?	1.90	1.89	0.01	0.0175	0.6125
Subcluster 2: EH Household	**Control Mean**	**Treatment Mean**	**Diff.**	**Standard Error**	**P-value**
Gender	1.00	1.00	0.00	0.0028	0.3177
Age	43.36	41.72	1.64	0.8880	0.0651
Is the Household Head Literate?	1.88	1.90	-0.02	0.0266	0.5033
Highest Grade Completed	8.25	8.21	0.05	0.2713	0.8679
Work Type	3.91	3.77	0.14	0.1191	0.2388
Financial Aid	205.35	166.28	39.07	58.8715	0.5071
Number of Household Members	4.98	5.05	-0.07	0.1250	0.5644
Other Land in City	1.89	1.85	0.04	0.0257	0.1048
Other Land in Village	1.68	1.58	0.10	0.0370	0.0051
House Ownership	1.38	1.50	-0.12	0.0789	0.1256
Monthly Expenditure	5776.12	5470.57	305.55	335.7035	0.3631
Did the household receive any assistance from the government?	1.87	1.87	0.00	0.0260	0.9751

Subcluster 3: PL Household	Control Mean	Treatment Mean	Diff.	Standard Error	P-value
Gender	1.80	1.78	0.02	0.0359	0.6194
Age	53.74	53.53	0.20	1.2037	0.8651
Is the Household Head Literate?	1.18	1.18	0.00	0.0373	0.9755
Highest Grade Completed	6.36	6.56	-0.20	0.5976	0.7421
Work Type	3.61	3.81	-0.20	0.1966	0.3197
Financial Aid	248.79	173.85	74.94	59.6742	0.2097
Number of Household Members	5.16	5.20	-0.04	0.1630	0.7851
Other Land in City	1.92	1.91	0.01	0.0248	0.6309
Other Land in Village	1.87	1.92	-0.05	0.0268	0.0929
House Ownership	1.36	1.33	0.03	0.0771	0.7143
Monthly Expenditure	4995.61	5528.05	-532.44	444.8325	0.2319
Did the household receive any assistance from the government?	1.87	1.84	0.03	0.0306	0.3499

Table A.2 Endline Balancing Table

Entire Endline Sample	Control Mean	Treatment Mean	Diff.	Standard Error	P-value
Gender	1.11	1.10	0.01	0.0074	0.0999
Age	41.27	41.00	0.26	0.2564	0.3019
Is the Household Head Literate?	1.70	1.71	0.00	0.0125	0.7447
Highest Grade Completed	8.83	8.99	-0.16	0.1011	0.1113
Work Type	1.99	1.99	0.00	0.0177	0.8888
Financial Aid	188.74	192.02	-3.29	19.3095	0.8648
Number of Household Members	5.63	5.60	0.03	0.0514	0.5669
Other Land in City	1.94	1.94	0.00	0.0058	0.7748
Other Land in Village	1.81	1.80	0.01	0.0097	0.5349
House Ownership	1.48	1.41	0.07	0.0236	0.0056
Monthly Expenditure	6388.86	6480.51	-91.65	126.0069	0.4670
Did the household receive any assistance from the government?	1.39	1.40	-0.01	0.0120	0.2476
Subcluster 1: PL Household	**Control Mean**	**Treatment Mean**	**Diff.**	**Standard Error**	**P-value**
Gender	1.30	1.26	0.03	0.0194	0.1074
Age	40.84	40.91	-0.07	0.4730	0.8853
Is the Household Head Literate?	1.58	1.58	0.00	0.0228	0.9591
Highest Grade Completed	8.19	8.44	-0.25	0.1819	0.1641
Work Type	2.03	2.06	-0.03	0.0328	0.4364
Financial Aid	121.82	159.57	-37.75	30.1172	0.2102
Number of Household Members	5.43	5.46	-0.03	0.0982	0.7493
Other Land in City	1.97	1.95	0.01	0.0084	0.1681
Other Land in Village	1.99	1.99	0.00	0.0039	0.3713
House Ownership	1.52	1.44	0.08	0.0432	0.0665
Monthly Expenditure	5487.87	5533.53	-45.66	179.7519	0.7995
Did the household receive any assistance from the government?	1.39	1.43	-0.04	0.0214	0.0505

Subcluster 2: ES Household	Control Mean	Treatment Mean	Diff.	Standard Error	P-value
Gender	1.02	1.01	0.00	0.0050	0.5400
Age	41.41	41.54	-0.13	0.4200	0.7617
Is the Household Head Literate?	1.75	1.76	-0.01	0.0194	0.5287
Highest Grade Completed	9.11	9.14	-0.03	0.1655	0.8361
Work Type	2.00	1.93	0.07	0.0283	0.0128
Financial Aid	243.28	229.43	13.85	35.3681	0.6953
Number of Household Members	5.97	5.91	0.06	0.0839	0.4651
Other Land in City	1.93	1.93	-0.01	0.0102	0.5472
Other Land in Village	1.65	1.65	0.00	0.0189	0.9844
House Ownership	1.44	1.38	0.07	0.0373	0.0776
Monthly Expenditure	7793.55	7887.90	-94.35	245.9720	0.7013
Did the household receive any assistance from the government?	1.33	1.34	-0.01	0.0188	0.7868
Subcluster 3: EH Household	**Control Mean**	**Treatment Mean**	**Diff.**	**Standard Error**	**P-value**
Gender	1.02	1.02	0.00	0.0065	0.9077
Age	41.53	40.40	1.13	0.4407	0.0105
Is the Household Head Literate?	1.77	1.77	0.01	0.0219	0.8142
Highest Grade Completed	9.01	9.25	-0.24	0.1746	0.1695
Work Type	1.94	1.99	-0.06	0.0314	0.0713
Financial Aid	193.35	178.12	15.23	33.4141	0.6486
Number of Household Members	5.44	5.35	0.08	0.0822	0.3079
Other Land in City	1.93	1.94	-0.01	0.0112	0.3481
Other Land in Village	1.80	1.79	0.01	0.0179	0.5222
House Ownership	1.48	1.43	0.05	0.0427	0.2695
Monthly Expenditure	5642.30	5651.98	-9.68	186.9686	0.9587
Did the household receive any assistance from the government?	1.45	1.46	0.00	0.0222	0.9126

Table A.3 Intra-Cluster Baseline Balancing Table

	ES Household (Subclust.1)	EH Household (Subclust.2)	Diff.	S.E.	p-value
Gender	1.04	1.00	0.04	0.01	0.00
Age	42.35	42.55	-0.20	0.56	0.72
Highest Grade Completed	7.48	8.23	-0.75	0.18	0.00
Work Type	1.36	1.52	-0.16	0.03	0.00
Financial Aid	35.71	184.69	-148.99	30.47	0.00
Number of Household Members	5.08	5.02	0.07	0.08	0.40
Other Land in Village	0.08	0.38	-0.29	0.02	0.00
House Ownership	3.93	4.07	-0.14	0.07	0.04
Latrine Type	3.67	3.61	0.06	0.08	0.44
Monthly Expenditure	4281.13	5615.02	-1333.89	192.10	0.00
Health Indicator	0.59	0.66	-0.07	0.02	0.00

Has Bank Account?	0.00	0.78	-0.78	0.02	0.00
Has Insurance?	0.15	0.39	-0.24	0.02	0.00
Is the Household Head Literate?	2.57	3.64	-1.07	0.06	0.00
	ES Household (Subclust.1)	**PL Household** (subclust.3)	**Diff.**	**S.E.**	**p-value**
Gender	1.04	1.79	-0.75	0.02	0.00
Age	42.35	53.85	-11.50	0.68	0.00
Highest Grade Completed	7.48	6.46	1.02	0.32	0.00
Work Type	1.36	1.46	-0.10	0.04	0.01
Financial Aid	35.71	211.61	-175.91	31.15	0.00
Number of Household Members	5.08	5.18	-0.10	0.09	0.31
Other Land in Village	0.08	0.10	-0.02	0.02	0.21
House Ownership	3.93	4.30	-0.36	0.07	0.00
Latrine Type	3.67	3.51	0.16	0.09	0.06
Monthly Expenditure	4281.13	5260.29	-979.16	242.70	0.00
Health Indicator	0.59	0.55	0.05	0.03	0.07
Has Bank Account?	0.00	0.54	-0.54	0.02	0.00
Has Insurance?	0.15	0.25	-0.10	0.02	0.00
Is the Household Head Literate?	2.57	1.48	1.09	0.06	0.00
	EH Household (Subclust.2)	**PL Household** (Subclust.3)	**Diff.**	**S.E.**	**p-value**
Gender	1.00	1.79	-0.79	0.02	0.00
Age	42.55	53.85	-11.30	0.73	0.00
Highest Grade Completed	8.23	6.46	1.77	0.33	0.00
Work Type	1.52	1.46	0.06	0.04	0.16
Financial Aid	184.69	211.61	-26.92	41.80	0.52
Number of Household Members	5.02	5.18	-0.16	0.10	0.11
Other Land in Village	0.38	0.10	0.27	0.02	0.00
House Ownership	4.07	4.30	-0.22	0.08	0.00
Latrine Type	3.61	3.51	0.10	0.09	0.30
Monthly Expenditure	5615.02	5260.29	354.73	277.17	0.20
Health Indicator	0.66	0.55	0.12	0.03	0.00
Has Bank Account?	0.78	0.54	0.24	0.03	0.00
Has Insurance?	0.39	0.25	0.14	0.03	0.00
Is the Household Head Literate?	3.64	1.48	2.16	0.06	0.00

Table A.4 Intra-Cluster Endline Balancing Table

	PL Household (Subclust.1)	ES Household (Subclust.2)	Difference	Standard Error	P-Value
Gender	1.28	1.02	0.26	0.01	0.00
Age	40.92	41.48	-0.56	0.31	0.07
Is the Household Head Literate?	2.70	3.20	-0.50	0.04	0.00
Highest Grade Completed	8.32	9.13	-0.81	0.12	0.00
Work Type	1.95	2.03	-0.08	0.02	0.00
Financial Aid	141.48	235.85	-94.37	23.43	0.00
Number of Household Members	5.45	5.94	-0.49	0.06	0.00
Other Land in Village	0.01	0.35	-0.34	0.01	0.00
House Ownership	5.25	5.39	-0.14	0.04	0.00
Latrine Type	3.66	3.91	-0.25	0.02	0.00
Has Bank Account?	0.19	0.90	-0.71	0.01	0.00
Has Insurance?	0.41	0.61	-0.20	0.01	0.00
Monthly Household Expenditure	5511.67	7844.10	-2332.43	152.85	0.00
Household Health Indicator	0.21	0.01	0.21	0.01	0.00
	PL Household (Subclust.1)	EH Household (Subclust.3)	Difference	Standard Error	P-Value
Gender	1.28	1.02	0.26	0.01	0.00
Age	40.92	40.95	-0.03	0.32	0.93
Is the Household Head Literate?	2.70	3.21	-0.51	0.04	0.00
Highest Grade Completed	8.32	9.13	-0.81	0.13	0.00
Work Type	1.95	2.03	-0.08	0.02	0.00
Financial Aid	141.48	185.53	-44.06	22.73	0.05
Number of Household Members	5.45	5.39	0.05	0.06	0.41
Other Land in Village	0.01	0.21	-0.20	0.01	0.00
House Ownership	5.25	5.28	-0.02	0.04	0.63
Latrine Type	3.66	3.83	-0.17	0.03	0.00
Has Bank Account?	0.19	0.67	-0.48	0.01	0.00
Has Insurance?	0.41	0.42	-0.01	0.02	0.72
Monthly Household Expenditure	5511.67	5647.27	-135.60	129.83	0.30
Household Health Indicator	0.21	1.00	-0.79	0.01	0.00
	ES Household (Subclust.2)	EH Household (Subclust.3)	Difference	Standard Error	P-Value
Gender	1.02	1.02	-0.01	0.00	0.13
Age	41.48	40.95	0.53	0.30	0.08
Is the Household Head Literate?	3.20	3.21	-0.01	0.04	0.75
Highest Grade Completed	9.13	9.13	0.00	0.12	0.99
Work Type	2.03	2.03	0.00	0.02	0.97
Financial Aid	235.85	185.53	50.32	24.30	0.04
Number of Household Members	5.94	5.39	0.54	0.06	0.00

Other Land in Village	0.35	0.21	0.15	0.01	0.00
House Ownership	5.39	5.28	0.11	0.04	0.01
Latrine Type	3.91	3.83	0.08	0.02	0.00
Has Bank Account?	0.90	0.67	0.23	0.01	0.00
Has Insurance?	0.61	0.42	0.19	0.01	0.00
Monthly Household Expenditure	7844.10	5647.27	2196.82	155.16	0.00
Household Health Indicator	0.01	1.00	-0.99	0.00	0.00

Table B: Business Start and Performance

Table B.1

New Business Start

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	0.0308**	0.0655**	0.0170	0.0229
	(0.0155)	(0.0254)	(0.0267)	(0.0253)
Control Mean	0.1215***	0.1114***	0.1265***	0.1236***
	(0.0108)	(0.0147)	(0.0190)	(0.0194)
N	3081	774	1361	946
r2	0.0020	0.0088	0.0006	0.0011
F	3.9685	6.6375	0.4072	0.8209

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table B.2

Closed Business

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	0.0010	0.0015	0.0121	-0.0121
	(0.0140)	(0.0131)	(0.0214)	(0.0178)
Control Mean	0.0495***	0.0399***	0.0592***	0.0486***
	(0.0104)	(0.0101)	(0.0147)	(0.0148)
N	4538	1551	1617	1370
r2	0.0000	0.0000	0.0006	0.0009
F	0.0048	0.0135	0.3207	0.4584

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table B.3

Business Profit

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-212.2984	344.7672	1885.1095	-3275.8327
	(2201.3537)	(1051.6970)	(1386.4888)	(6615.8344)
Control Mean	3710.3066*	2408.7526***	1028.9131	8285.4007
	(2037.3124)	(322.2765)	(1179.9340)	(6174.3991)
N	2987	746	1323	918
r2	0.0000	0.0002	0.0010	0.0004
F	0.0093	0.1075	1.8486	0.2452

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table B.4

Business Revenue

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-739.7528	857.3717	-875.8013	-2024.8327
	(4318.3774)	(2218.9751)	(3519.4090)	(12402.4006)
Control Mean	13187.2215***	7398.9844***	12525.2219***	19002.6652*
	(3819.9569)	(1146.0599)	(3017.7000)	(11314.4041)
N	2987	746	1323	918
r2	0.0000	0.0003	0.0001	0.0000
F	0.0293	0.1493	0.0619	0.0267

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table B.5

Business Cost

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-527.4544	512.6045	-2760.9108	1251.0000
	(2604.8472)	(1608.5968)	(3442.8645)	(6391.5212)
Control Mean	9476.9149***	4990.2318***	11496.3088***	10717.2645**
	(2073.7828)	(949.1303)	(3032.0733)	(5168.6597)
N	2987	746	1323	918
r2	0.0000	0.0002	0.0009	0.0001
ar2				
F	0.0410	0.1015	0.6431	0.0383

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table B.6

Wages Paid to Non-Household Members

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-25.8598	-5404.8562**	2956.0365	-2158.8315
	(1661.9823)	(2533.7363)	(2074.3747)	(2738.7341)
Control Mean	5613.5844***	7200.0000***	4505.1429***	6772.8571**
	(1305.8106)	(2510.7559)	(1253.3937)	(2489.6452)
N	161	29	85	47
r2	0.0000	0.1182	0.0266	0.0174
F	0.0002	4.5504	2.0307	0.6214

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table B.7

Number of Employees (Non-Household Members)

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-0.3549	-0.0266	-0.0498	-1.0185
	(0.4818)	(0.5623)	(0.7128)	(0.9079)
Control Mean	3.2276***	2.3158***	3.3134***	3.5405***
	(0.3453)	(0.3751)	(0.4518)	(0.8581)
N	269	44	144	81
r2	0.0031	0.0000	0.0001	0.0269
F	0.5426	0.0022	0.0049	1.2585

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table B.8
Business Operation with Help from Household Members?

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-0.0136	-0.0106	-0.0439	0.0308
	(0.0308)	(0.0476)	(0.0410)	(0.0483)
Control Mean	0.3721***	0.3830***	0.3846***	0.3460***
	(0.0166)	(0.0294)	(0.0276)	(0.0299)
N	2670	662	1197	811
r2	0.0002	0.0001	0.0021	0.0010
F	0.1937	0.0496	1.1502	0.4054

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table B.9
Total Working Hours Rendered by Members of Households in the last week (total man-hours)

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-3.3306*	-4.4851	-0.0181	-7.7835**
	(1.8587)	(3.1701)	(2.7621)	(3.7649)
Control Mean	14.6294***	15.2813***	13.2222***	16.1829***
	(1.4812)	(2.6712)	(1.4228)	(3.3179)
N	580	171	257	152
r2	0.0092	0.0173	0.0000	0.0449
F	3.2111	2.0017	0.0000	4.2740

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table B.10
Number of Casual Workers (Non-Household Members)

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	0.6468	0.8965	-0.1399	1.5556
	(0.9729)	(2.3009)	(1.2966)	(1.0864)
Control Mean	3.4516***	3.3333	4.2000***	2.6154***
	(0.5709)	(1.8559)	(0.9166)	(0.6441)
N	69	6	42	21
r2	0.0085	0.0370	0.0004	0.0472
F	0.4420	0.1518	0.0116	2.0504

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table B.11
Average Hours Rendered by the Person Most Responsible in the Business

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	0.5611	1.2710	0.3977	0.1498
	(1.0029)	(1.0599)	(1.1528)	(1.1067)
Control Mean	11.2681***	10.2449***	11.3986***	11.9765***
	(0.6901)	(0.7501)	(0.7954)	(0.7403)
N	2958	740	1308	910
r2	0.0021	0.0108	0.0011	0.0001
F	0.3130	1.4379	0.1190	0.0183

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table B.12
Number of Days Rendered by the Person Most Responsible in the Business

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	0.1597	0.2199	0.0814	0.1948
	(0.1620)	(0.2222)	(0.1735)	(0.2259)
Control Mean	6.0541***	5.8635***	6.1420***	6.1051***
	(0.1260)	(0.1620)	(0.1337)	(0.1759)
N	2960	740	1309	911
r2	0.0019	0.0029	0.0005	0.0029
F	0.9712	0.9794	0.2203	0.7435

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table B.13
Business Inventory

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	242.5512	-842.0647	997.4657	-304.3453
	(1199.7489)	(1010.0898)	(2173.6673)	(1510.0838)
Control Mean	2755.6280***	1698.6847*	3028.7345***	3329.8320***
	(675.9357)	(989.2224)	(787.5264)	(1062.4739)
N	2387	600	1044	743
r2	0.0000	0.0014	0.0002	0.0001
F	0.0409	0.6950	0.2106	0.0406

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table B.14
Business Asset Spending for the Past Year

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	397.5877*	-4.0377	927.8006*	120.3781
	(214.0840)	(89.4319)	(526.8692)	(86.9452)
Control Mean	280.3101***	151.3069**	480.5135***	176.1454***
	(71.0998)	(64.7947)	(179.6663)	(53.6081)
N	6778	2154	2561	2063
r2	0.0006	0.0000	0.0012	0.0008
F	3.4490	0.0020	3.1010	1.9169

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table B.15
Poultry: Number of Birds Owned

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	0.5488	0.1531	0.1302	1.5728**
	(0.5586)	(0.5748)	(0.7601)	(0.7768)
Control Mean	2.4564***	2.2542***	3.0750***	1.7857***
	(0.3183)	(0.3371)	(0.5008)	(0.3560)
N	478	143	212	123
r2	0.0061	0.0007	0.0003	0.0560
F	0.9653	0.0710	0.0293	4.0991

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table B.16

Livestock: Number of Cows Owned

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-0.1546	-0.0515	0.2292	-0.8677
	(0.3294)	(0.2411)	(0.4071)	(0.5462)
Control Mean	0.7668***	0.5690***	0.5570**	1.2679**
	(0.2675)	(0.1774)	(0.2432)	(0.5182)
N	473	140	210	123
r2	0.0013	0.0004	0.0030	0.0222
F	0.2203	0.0456	0.3170	2.5235

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table B.17

Livestock: Number of Goats, Sheep, and Pigs Owned

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-0.0885	0.2856	-0.3366	-0.0862
	(0.2419)	(0.3260)	(0.4404)	(0.3395)
Control Mean	0.7552***	0.6316***	0.8500**	0.7455***
	(0.1992)	(0.2319)	(0.4090)	(0.1871)
N	472	138	211	123
r2	0.0004	0.0082	0.0043	0.0006
F	0.1338	0.7672	0.5841	0.0645

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table B.18

Livestock: Number of Other Large Animals Owned

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-0.0171	0.1683	-0.0130	-0.1993
	(0.1748)	(0.2413)	(0.2002)	(0.4062)
Control Mean	0.4462***	0.4074**	0.3718**	0.5926
	(0.1539)	(0.1644)	(0.1616)	(0.3539)
N	461	132	207	122
r2	0.0000	0.0037	0.0000	0.0042
F	0.0096	0.4865	0.0042	0.2409

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table C: Income and Spending

Table C.1
Impact on Household Income: Work Earnings

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-440.9097	-378.1599	-696.6720	-237.0789
	(504.6112)	(440.4463)	(652.2173)	(520.5053)
Control Mean	3337.1533***	2852.4240***	4035.3415***	3016.1110***
	(354.6647)	(322.7656)	(450.9703)	(387.1081)
N	6746	2154	2533	2059
r2	0.0035	0.0037	0.0068	0.0011
F	0.7635	0.7372	1.1410	0.2075

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table C.2
"How do you feel about your overall financial situation?" (Scale of 1-10)

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	0.0565	0.0047	0.0319	0.1345*
	(0.0615)	(0.0715)	(0.0834)	(0.0689)
Control Mean	3.4264***	3.1967***	3.5671***	3.4975***
	(0.0445)	(0.0499)	(0.0638)	(0.0508)
N	6746	2151	2555	2040
r2	0.0006	0.0000	0.0002	0.0031
F	0.8445	0.0043	0.1461	3.8116

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table C.3
Total Household Spending

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	186.5981	110.0690	243.2547	74.1483
	(225.0563)	(269.6501)	(338.2384)	(260.1021)
Control Mean	6388.8587***	5487.8708***	7793.5523***	5642.3046***
	(154.3218)	(216.0116)	(253.5914)	(169.2473)
N	6761	2151	2563	2047
r2	0.0003	0.0002	0.0004	0.0001
F	0.6874	0.1666	0.5172	0.0813

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table C.4
Food Spending

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-13.3139	-33.7654	-29.9886	7.8663
	(56.6315)	(84.3807)	(77.3512)	(61.9081)
Control Mean	2229.3030***	2049.7852***	2490.3693***	2102.7997***
	(40.5224)	(69.1618)	(54.9028)	(42.4590)
N	6481	2064	2460	1957
r2	0.0000	0.0002	0.0001	0.0000
ar2				
F	0.0553	0.1601	0.1503	0.0161

Cluster-robust standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table C.5

Temptation Goods Spending

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-34.8407	-17.8240	-41.9401	-49.5581
	(23.9595)	(27.8308)	(32.8773)	(32.8110)
Control Mean	381.3000***	314.6456***	461.0989***	354.6783***
	(16.3640)	(15.3472)	(23.4216)	(24.2008)
N	6345	2021	2407	1917
r2	0.0010	0.0003	0.0011	0.0025
F	2.1145	0.4102	1.6273	2.2813

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table C.6

Celebration Spending (excluding Wedding)

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-136.6597	336.9359	-288.2456	-425.5119
	(316.3483)	(463.8043)	(409.6546)	(290.2231)
Control Mean	5058.5470***	4127.4513***	6185.2004***	4669.5408***
	(196.2555)	(201.0828)	(289.0062)	(209.0420)
N	4769	1617	1760	1392
r2	0.0001	0.0005	0.0003	0.0030
F	0.1866	0.5277	0.4951	2.1496

Cluster-robust standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table C.7

Household Asset Spending

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	1420.7916**	591.4803	2634.0175**	524.0927
	(706.9785)	(737.6425)	(1321.4902)	(1166.0467)
Control Mean	6661.5614***	4253.2995***	9214.5241***	6099.7124***
	(388.6301)	(413.2176)	(786.0458)	(625.2370)
N	6720	2136	2549	2035
r2	0.0008	0.0004	0.0020	0.0001
F	4.0388	0.6430	3.9729	0.2020

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table C.8

Household Repair Spending Amounting to More than Rs. 500

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-0.0307	-0.0183	-0.0221	-0.0603*
	(0.0209)	(0.0245)	(0.0256)	(0.0312)
Control Mean	0.5059***	0.4762***	0.5653***	0.4658***
	(0.0141)	(0.0183)	(0.0161)	(0.0233)
N	6750	2150	2556	2044
r2	0.0009	0.0003	0.0005	0.0037
F	2.1465	0.5555	0.7458	3.7320

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table C.9

House Waterproofing

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	0.0658	0.0649	0.0472	0.0888
	(0.0603)	(0.0697)	(0.0729)	(0.0702)
Control Mean	0.9318***	0.8482***	0.9722***	0.9701***
	(0.0497)	(0.0551)	(0.0597)	(0.0564)
N	6776	2156	2558	2062
r2	0.0013	0.0013	0.0007	0.0024
F	1.1926	0.8672	0.4190	1.5979

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01
House waterproofing was defined as a categorical value. 0 - Not waterproof, 1 - Some rooms are waterproofed, 2: All rooms are waterproofed.

Table C.10

Shared Latrine

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-0.0331	-0.0189	-0.0444	-0.0316
	(0.0346)	(0.0431)	(0.0369)	(0.0374)
Control Mean	0.4037***	0.4397***	0.3749***	0.4042***
	(0.0235)	(0.0297)	(0.0264)	(0.0253)
N	6173	1863	2416	1894
r2	0.0012	0.0004	0.0022	0.0010
F	0.9161	0.1927	1.4459	0.7125

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table D: Health Indicators and Health Shock Coping Mechanisms

Table D.1

Medical Related Spending

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	3.0781	-91.7849	69.4210	-19.6282
	(60.6141)	(84.4899)	(124.1584)	(39.2200)
Control Mean	637.1744***	711.4412***	938.1528***	198.0121***
	(39.9560)	(70.3421)	(88.3544)	(31.2303)
N	6649	2119	2529	2001
r2	0.0000	0.0007	0.0002	0.0007
F	0.0026	1.1801	0.3126	0.2505

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table D.2

Health Expenditure due to Sickness or Accident

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-353.9208	-1365.5661**	243.6254	N/A
	(487.5482)	(637.1221)	(633.2684)	N/A
Control Mean	6151.6572***	6329.6224***	6051.0757***	N/A
	(293.3255)	(531.9778)	(362.3646)	N/A
N	6600	2487	4110	N/A
r2	0.0001	0.0020	0.0000	N/A
ar2				
F	0.5270	4.5939	0.1480	N/A

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table D.3

Did the sickness affect your work or school?

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	0.0230	0.0295	0.0180	N/A
	(0.0232)	(0.0334)	(0.0254)	N/A
Control Mean	0.6131***	0.6045***	0.6194***	N/A
	(0.0154)	(0.0223)	(0.0170)	N/A
N	6385	2412	3970	N/A
r2	0.0006	0.0009	0.0003	N/A
F	0.9784	0.7812	0.5009	N/A

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table D.4

Number of Days Missed in School or Work due to Sickness/Accident

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-3.0593	-1.2725	-4.2370	N/A
	(3.0889)	(4.5782)	(4.1682)	N/A
Control Mean	36.6598***	37.0443***	36.4200***	N/A
	(2.4970)	(3.7023)	(3.4576)	N/A
N	2860	1117	1743	N/A
r2	0.0004	0.0001	0.0007	N/A
F	0.9810	0.0772	1.0333	N/A

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table D.5
Coping with Health Shock through Other Funding Sources

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-0.0264*	-0.0140	-0.0328**	-0.0029
	(0.0142)	(0.0196)	(0.0141)	(0.0889)
Control Mean	0.0882***	0.0921***	0.0833***	0.1444
	(0.0112)	(0.0151)	(0.0114)	(0.0832)
N	6807	2526	4149	132
r2	0.0025	0.0006	0.0043	0.0000
F	3.4360	0.5104	5.4079	0.0010

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table D.6
Coping with Health Shock through Gifts

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-0.0065	-0.0041	-0.0076	-0.0222
	(0.0045)	(0.0074)	(0.0059)	(0.0140)
Control Mean	0.0229***	0.0251***	0.0216***	0.0222
	(0.0037)	(0.0057)	(0.0051)	(0.0140)
N	6807	2526	4149	132
r2	0.0005	0.0002	0.0008	0.0066
F	2.0531	0.3087	1.6408	.

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table D.7
Coping with Health Shock through Borrowing from Moneylenders

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-0.0043	-0.0116	-0.0016	0.0250
	(0.0201)	(0.0274)	(0.0234)	(0.0251)
Control Mean	0.2108***	0.2544***	0.1871***	0.1444***
	(0.0159)	(0.0201)	(0.0191)	(0.0094)
N	6807	2526	4149	132
r2	0.0000	0.0002	0.0000	0.0010
F	0.0449	0.1779	0.0048	0.9889

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table D.8
Coping with Health Shock through Other Financing Mechanisms

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	0.0232	0.0215	0.0221	0.0962
	(0.0200)	(0.0271)	(0.0238)	(0.0910)
Control Mean	0.4752***	0.4184***	0.5100***	0.4778***
	(0.0142)	(0.0209)	(0.0174)	(0.0773)
N	6807	2526	4149	132
r2	0.0005	0.0005	0.0005	0.0077
F	1.3493	0.6276	0.8629	1.1166

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table D.9
Coping with Health Shock through borrowing from Other MFIs

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-0.0040	-0.0048	-0.0035	-0.0111
	(0.0056)	(0.0069)	(0.0077)	(0.0070)
Control Mean	0.0173***	0.0167***	0.0180***	0.0111
	(0.0044)	(0.0055)	(0.0062)	(0.0070)
N	6807	2526	4149	132
r2	0.0003	0.0004	0.0002	0.0033
F	0.5155	0.4960	0.2077	.

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table D.10
Coping with Health Shock through Borrowing from Relatives and Friends

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	0.0088	0.0080	0.0110	-0.0605
	(0.0173)	(0.0255)	(0.0185)	(0.0544)
Control Mean	0.1898***	0.1958***	0.1856***	0.2000***
	(0.0120)	(0.0191)	(0.0127)	(0.0386)
N	6807	2526	4149	132
r2	0.0001	0.0001	0.0002	0.0051
F	0.2588	0.0989	0.3548	1.2346

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table D.11
Coping with Health Shock through Borrowing from Spandana

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	0.0076***	0.0072**	0.0079**	0.0000
	(0.0023)	(0.0034)	(0.0031)	(0.0000)
Control Mean	0.0025***	0.0017	0.0031**	0.0000
	(0.0009)	(0.0011)	(0.0013)	(0.0000)
N	6807	2526	4149	132
r2	0.0024	0.0025	0.0023	.
F	10.5002	4.5353	6.4142	.

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table E: Impact on the Occurrence Other Shocks

Table E.1

Incidence of Property Shock

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-0.0096	-0.0041	-0.0181	-0.0084
	(0.0107)	(0.0158)	(0.0152)	(0.0137)
Control Mean	0.1142***	0.0881***	0.1590***	0.0878***
	(0.0070)	(0.0102)	(0.0107)	(0.0100)
N	6753	2153	2561	2039
r2	0.0002	0.0001	0.0006	0.0002
F	0.8080	0.0666	1.4221	0.3768

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table E.2

Incidence of Job/Business loss

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-0.0022	-0.0060	0.0011	-0.0025
	(0.0045)	(0.0078)	(0.0069)	(0.0065)
Control Mean	0.0246***	0.0261***	0.0261***	0.0213***
	(0.0035)	(0.0059)	(0.0053)	(0.0047)
N	6741	2152	2554	2035
r2	0.0001	0.0004	0.0000	0.0001
F	0.2266	0.5883	0.0253	0.1469

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table F: Indicators of Women Empowerment

Table F.1

All Decisions

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	0.0751	-0.0086	0.0161	0.2433
	(0.1423)	(0.1816)	(0.1715)	(0.1860)
Control Mean	2.3008***	3.0039***	2.1480***	1.7523***
	(0.0945)	(0.1191)	(0.1337)	(0.1159)
N	6746	2145	2559	2042
r2	0.0002	0.0000	0.0000	0.0029
F	0.2781	0.0022	0.0088	1.7115

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table F.2

Women Decision on Education and Education Related Spending

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	0.0230	0.0048	0.0086	0.0598**
	(0.0202)	(0.0245)	(0.0264)	(0.0262)
Control Mean	0.2179***	0.2718***	0.2212***	0.1577***
	(0.0140)	(0.0171)	(0.0201)	(0.0161)
N	6746	2145	2559	2042
r2	0.0007	0.0000	0.0001	0.0059
F	1.2960	0.0391	0.1067	5.2257

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table F.3

Women Decision on Food Expenditure

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	0.0311	0.0201	0.0330	0.0395
	(0.0408)	(0.0431)	(0.0419)	(0.0523)
Control Mean	0.5742***	0.6243***	0.5736***	0.5228***
	(0.0295)	(0.0287)	(0.0324)	(0.0380)
N	6746	2145	2559	2042
r2	0.0010	0.0004	0.0011	0.0016
F	0.5806	0.2188	0.6201	0.5682

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table F.4

Women Decision on Health

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	0.0275	0.0139	0.0380	0.0309
	(0.0231)	(0.0316)	(0.0287)	(0.0289)
Control Mean	0.2846***	0.4087***	0.2363***	0.2133***
	(0.0146)	(0.0202)	(0.0218)	(0.0169)
N	6746	2145	2559	2042
r2	0.0009	0.0002	0.0019	0.0014
F	1.4172	0.1926	1.7614	1.1464

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table F.5

Women Decision on Clothing

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	0.0183	0.0096	0.0012	0.0492
	(0.0257)	(0.0315)	(0.0311)	(0.0338)
Control Mean	0.3547***	0.4583***	0.3440***	0.2599***
	(0.0172)	(0.0204)	(0.0232)	(0.0212)
N	6746	2145	2559	2042
r2	0.0004	0.0001	0.0000	0.0030
F	0.5095	0.0922	0.0014	2.1161

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table F.6

Women Decision on Home Improvement

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-0.0087	-0.0345	-0.0034	0.0143
	(0.0171)	(0.0254)	(0.0249)	(0.0200)
Control Mean	0.2291***	0.3709***	0.1783***	0.1426***
	(0.0112)	(0.0190)	(0.0186)	(0.0127)
N	6746	2145	2559	2042
r2	0.0001	0.0013	0.0000	0.0004
F	0.2580	1.8437	0.0184	0.5124

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table F.7

Women Decision on Spending on Durables

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-0.0134	-0.0300	-0.0236	0.0179
	(0.0151)	(0.0247)	(0.0207)	(0.0226)
Control Mean	0.2737***	0.3961***	0.2464***	0.1790***
	(0.0092)	(0.0159)	(0.0166)	(0.0129)
N	6746	2145	2559	2042
r2	0.0002	0.0010	0.0008	0.0005
F	0.7980	1.4731	1.3060	0.6310

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table F.8

Women Decision on Investments in Gold and Silver

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	-0.0028	0.0075	-0.0378	0.0317
	(0.0255)	(0.0326)	(0.0300)	(0.0369)
Control Mean	0.3666***	0.4738***	0.3482***	0.2770***
	(0.0157)	(0.0207)	(0.0229)	(0.0226)
N	6746	2145	2559	2042
r2	0.0000	0.0001	0.0016	0.0012
F	0.0119	0.0528	1.5846	0.7384

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table G: Education

Table G.1

Education Spending

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	50.2972	19.7635	-9.7750	147.9825
	(62.4775)	(51.3998)	(82.4083)	(115.9111)
Control Mean	688.4771***	489.0369***	849.3271***	704.0283***
	(40.2966)	(39.1883)	(59.0310)	(53.6010)
N	6425	2046	2444	1935
r2	0.0003	0.0001	0.0000	0.0022
F	0.6481	0.1478	0.0141	1.6299

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table G.2

Number of Enrolled Individuals in the Household

	(1) ALL Household	(2) PL Household	(3) ES Household	(4) EH Household
Treatment	0.0113	0.0055	-0.0259	0.0611
	(0.0407)	(0.0585)	(0.0541)	(0.0580)
Control Mean	1.6150***	1.4193***	1.6986***	1.7173***
	(0.0282)	(0.0451)	(0.0373)	(0.0394)
N	6798	2158	2564	2076
r2	0.0000	0.0000	0.0001	0.0006
F	0.0771	0.0089	0.2284	1.1095

Cluster-Robust Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.01