

The Long term Impacts of a “Graduation” Program: Evidence from West Bengal

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Abstract

This note reports on the long run (seven-year) impact of Bandhan’s “Targetting the Hard Core Poor program”, a multifaceted anti-poverty program which includes an asset transfer and support for 18 months, in West Bengal, India. Evaluations in seven different sites, including West Bengal (reported in Banerjee et al (2015) and Bandiera et al (2016)) find large effect of the programs, 3 years after it was launched (and 18 months after services ended). In the longer run, we find large, persistent, and often growing impacts: Seven years after the asset were first distributed, the monthly consumption of those assigned to treatment is 16 dollars– or 25%– higher than the consumption of non those assigned to control (the short term effect was 6.6 dollars – or 12%). Positive effects are found across all categories of outcomes (consumption, assets, income, food security, financial stability, time spent working, and physical and mental health), including some outcomes where we did not originally find an effect in the short or medium run. This suggests that the promise of the program to have unlocked a “poverty trap” seem realized, at least in this context.

This note reports the long run impact of Bandhan’s “Targeting the Hard Core Poor program (THP)” in West Bengal. Originally designed and implemented by BRAC, a large Bangladeshi NGO that runs several country-wide programs, known as the “Graduation” program, it provides a holistic set of services, including the grant of a productive asset, to the poorest households in a village (referred to by BRAC as the “ultra-poor”). The beneficiaries are identified through a participatory process in a village meeting, followed by a verification visit by the organization’s staff. Selected beneficiaries are then given a productive asset that they choose from a list, training and support for the asset

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they have chosen, as well as general life skills coaching, weekly consumption support for some fixed period, and typically access to savings accounts and health information or services. These different activities (plus regular interactions with the households over the course of a year) are designed to complement each other in helping households to start a productive self-employment activity. The idea is to provide a “big push”, over a limited period of time, with the hope of unlocking a poverty trap. After graduation (roughly 18 months after the program begins), Bandhan has no further contacts with the beneficiaries’ households, except to the extent that they become Bandhan’s microfinance clients (which happens infrequently).

Experimental evaluations in seven different sites (reported in Banerjee et al (2015) and Bandiera et al (2016)) find, for all sites but one, a large effect of the programs, 3 years after it was initiated and 18 months after the beneficiaries graduated. Bandiera et al (2016), like us, also report on long-term (7 year follow up) results in their study area of Bangladesh. They find evidence of persistent and growing gains relative to the control group between year 4 and year 7, but this part of their analysis is somewhat speculative since after year 4 their control group was also treated. In our study, the control group was left entirely untouched for seven years.

Here, we present results from three survey waves in West Bengal, following the baseline survey. The asset transfer occurred immediately following the baseline survey. The timelines of the surveys are presented in the following table:

Timeline of Surveys

	Date	Time since Asset Transfer
Baseline	February 2007- March 2008	-
Endline 1	January 2009- November 2009	18 months
Endline 2	June 2010-February 2011	30 months
Endline 3	September 2014- March 2015	7 years

The short run results in West Bengal were relatively large, compared to most other sites (but very similar to those in nearby Bangladesh). Here we show that they are remarkably persistent, and in many cases growing, over time; Almost six years after they have stopped receiving any services, beneficiaries’ households are significantly better across a range of dimensions, suggesting that the claim that the program may have unlocked a poverty trap appears to be justified.

1 Empirical Strategy

We estimate the impact of the THP program on a number of household and individual level outcomes, including income, consumption, health, food security and labor supply at different points of time, which are all denoted by y . Letting S_i be an indicator variable that household i was randomly selected to participate in the THP program, we estimate in each case the following

equation for household level outcomes. To facilitate comparisons between the endlines, all reported dollar values are converted to 2014 USD PPP.

$$y_{ih} = \beta S_{ih} + \alpha_h + \epsilon_{ih}, \quad (1)$$

where the subscript h indicates hamlet (a sub-unit of villages). We include hamlet-level fixed effects to account for stratification. Random offers of program participation ensure that S_{ih} is not correlated with ϵ_{ih} so we can recover the true causal impact of the program offer on the outcome. This is measured by β , which captures the mean difference in y between those who were offered program participation and those that were not, after removing the effect of common hamlet-level determinants of y .¹

For individual level outcomes, we estimate:

$$y_{ijh} = \beta S_{ih} + \alpha_h + \epsilon_{ih} + \epsilon_{ijh} \quad (2)$$

where the subscript j denotes individual j residing in household i . When reporting results for individual level outcomes we cluster standard errors at the household level, to account for the likely correlation between members of the same household.

The coefficient β is an Intent to Treat (ITT) estimate and does not measure the actual impact of participating in the program (the Treated on Treated estimate). This is because not all the selected households agreed to participate (only 56% of selected households received the transfer). Moreover, a small number of control households (6 households) ended up being treated, mainly due to household merges. Its worth noting that there are potential spill-overs is. For example, gifts of food given may increase, and these probably go to ultrapoor households that are not participating in the program, which leads to an underestimation of the treatment effect when we make within village comparisons. There are also possible equilibrium effects: Bandiera et al (2015) show that wages of casual workers increase in treated villages, because the treated households work more in their household businesses and sell less labor. This implies that our within village comparison may be biased downwards. One could also imagine that the fact that beneficiary households are better fed and cheered up could mean that their labor supply goes up which will depress wages across the board. This will lead to an over estimation of the treatment effect. However given the (small) size of the actual intervention it is perhaps unlikely that we will see any effects: unlike Bandiera et al. (2015) who treat the entire ultrapoor population of village, we treat just 5 households.

Table 0A demonstrates that baseline characteristics are orthogonal to treatment assignment. In Table 0B-Panel A, we regress an indicator variable that the household was surveyed at baseline, but

¹The results for the first few waves are slightly different from the results reported for West Bengal in the science paper due to a minor error in the paper in the way the variables were converted to 2014 USD PPP, and due to the fact that the assets excludes fishing asset in this version of the paper. This does not materially affect anything.

not at endline on an indicator that the household was selected to participate in the program. The results in Panel A show that treatment assignment is not a significant predictor of attrition, which mitigates concerns about attrition bias affecting the results. Panel B, tests that the characteristics of those who attrited are not significantly different in the two samples. Only two of the coefficients on the interactions are significant at the 10% level- this is consistent with what we would expect to see by chance, and suggests that those who attrited do not seem to be different in the two samples

2 Results

Table 1 presents the results from estimating equation (1) with household-level indexed variables as the dependent variable. Indexed variables are standardized against the control group, with the exception of the asset indices, which are standardized against the baseline mean to allow for a comparison across endlines (Figure 1—all figures are in the appendix—shows the corresponding graphical representation of the results). Comparing beneficiaries to non beneficiaries of the original program, households have more assets, food security is higher, earn more, and are financially better off. Similarly, Table 2 and Figure 2, present the results for the adult-level indexed variables: Individuals are healthier, happier, and less stressed. Furthermore, the effects (except for productive assets) almost always grows over time, suggesting that the program may have put beneficiaries households on a different trajectory.

2.1 Assets

We start by taking a closer look at Table 1, and the impact of the program on the asset index. The program originally gave out a significant amount of assets, and it is therefore not surprising that households had more assets by endline 1. What is more striking is the extent to which this difference is persistent, suggesting that households have not been rapidly decumulating their assets. The asset index is statistically significantly larger at all endlines: 0.89 SDs larger in endline 1, 1.00 SDs larger in endline 2, and 0.99 SDs larger in endline 3 where the the unit is always the standard deviation in the baseline. The results are similar for productive assets, with very similar and equally significant point estimates. And although there appears to be no significant increase in household assets at endline 1, the household asset index increases by 0.45 SDs around endline 2, and 1.09 SDs by endline 3. Both these estimates are significant at the 1% level. ²

²Note that the relative treatment effect on assets is also a function of the baseline values, given that the indices are standardized against the baseline. The large impact on productive assets does not translate into a comparable treatment effect on total assets because productive assets represent a small fraction of total assets at baseline.

2.2 Consumption

Table 3 and Figure 3 report the impact of the program on consumption and food security. The point estimates imply that two and three years after the program was rolled out, individuals in treatment households consumed, on average, 7.04\$ and 6.6\$, more than control households per month. By the third endline, 7 years after the program roll-out, individuals in the treatment group were consuming 15.7\$ more per month relative to those in the control group. These estimates are all significant at the 1% level. The effects have grown over time, not only in absolute value but also as a proportion of the control group consumption. The 7.04 dollars at endline 1 represents a 11.5% increase over the control group mean. By the third endline, the proportional increase is 25%. This is a key result of this long term follow up: it is striking to see results not only not becoming more muted over time but increasing in proportion, even in a context where the control group's household consumption is also growing on average.

Columns (2) and (3) present results disaggregated by type of expenditure. At the first endline, treatment households spend on average 5.01\$ more on food and fuel and 1.93\$ more on non-food items. These results are significant at the 1% and 10% levels, respectively. At the second endline these trends continue, with treatment households spending 2.73\$ more on food and fuel, and 3.6\$ more on non-food items-significant at the 5% and 1% levels, respectively. Finally, by the third endline, individuals in treatment households are spending 9.12\$ more on food and fuel, and 6.52\$ more on nonfood consumption- also significant at the 1% level.

as shown in column (4), while durable goods consumption does not change at the first endline, it increases significantly at both the second, and third endline. At endline 2, individuals in treatment households are spending, on average, 0.82\$ more on durable goods per month, than their counterparts. By endline 3, they are spending 2.28\$ more on durable goods, which represents a more than 100% increase in durable good expenditure. Note that this is not a mechanical effect of greater access to microfinance. As we show in Table 5, there is an increase in formal borrowing (mainly microfinance) in endline 2, but not in endline 3.

Consistent with the increase in food expenditures, columns (5)-(9) show strong evidence that the program improved food security. In the second and third endlines, households are more likely to report getting enough food everyday and eating at least 2 meals a day. The probability that no adult skipped a meal also increases significantly across all endlines. In endline 3, the program also positively affects the probability that no child skips a meal, as well the probability that no one in the household went without food. Note that these increases are against the backdrop of improvement in food security overall (the probability that no one in the household went without food in the control group increased from 68% in EL1 to 85% in EL2 and 83% in EL3), this implies that it should be increasingly more difficult for a program to generate differential gains.

2.3 Income

The program aimed to increase consumption by providing beneficiaries with income-generating assets, enabling them to sustain a steady stream of income. Getting reliable measures of household income is difficult, so we address the question by considering several different variables.

First, we asked individuals to rate their economic status on a scale from 1 (worst) to 10 (best); results are reported in column (6) of Table 4. Not surprisingly, households see themselves as being very poor—1.97 on a scale of 1 to 10 at baseline. Over time, however, consistent with steady growth in consumption, all households feel richer. By the third endline, households in the control group place themselves at 4.74 on a scale of 1 to 10. Against this backdrop, the program increases beneficiaries’s perception of their financial position. In the first two survey rounds treatment households report a score that’s between 0.2 and 0.3 percentage points, or 8% higher than control households. By the third endline, treatment households report a score that’s 1.57, or 33% higher. These findings are significant at the 1% level.

Second, we obtained reports from the household heads’ of earnings disaggregated by source. Specifically, the respondent was asked to answer the following question for each household member: “How much does he/she earn in a typical month from this activity?” for long list of activities. We sum the measures across individuals to obtain the total household income from that type of activity.

According to these measures, at the first endline, the primary source of increased total income was additional income generated by livestock. Average monthly revenue from livestock in treatment was 307% higher relative to the control group mean. This is significant at the 1% level. Although the point estimates for other sources of income are also positive, none of them are significant. However, by the second endline, it is clear that the program had a positive impact on other income sources. It is still true that livestock revenue for treatment households is higher (by about 100% compared to the control group, significant at the 1% level). However in addition, income from non-agricultural entrepreneurial endeavors increased by 30%, while income from paid labor increased by 82%. Both are significant at the 5% level.

Results from the third endline indicate that these impacts continue to persist 7 years after the start of the program. Livestock revenue is 286% higher in treatment relative to the control group mean, while income from non-agricultural entrepreneurial activities is double. Both these estimates are significant at the 1% level. Similarly, income from paid labor is 25% higher than the control group. All these estimates are significant, including the paid labor income (at the 5% level). This is a large increase in absolute terms. This is not because they are working more hours. As we will see below the effect of treatment on hours worked is negative in all three endlines, though never significantly so. This means that the wage per hour, for the households do engage in such work, did go up. This could be due to equilibrium effect of the program on wages (as suggested by Bandiera et al), though as suggested above, this is unlikely because of the small scale of the program or it

could be because the workers are now more choosy about the jobs they take.

What is particularly interesting is that the results on business income are all "downstream" impacts, and suggestive of diversification: 90% of the households were provided with livestock, so the increase in business income must come from the fact that they invested part of the gains realized from the livestock business in other activities.

2.4 Financial Inclusion

Table 5 and Figure 5 present the effect on savings and borrowing. The program had a strong forced savings component, and we do see a statistically significant increase in savings at endline 1 (1.79 dollars). The impact on savings was large in absolute value, but smaller in proportion, and insignificant, in endline 2. Remarkably, by endline 3, the amount deposited in savings account is more than double that in the control group (the treatment effect is 18.64 dollars, against a control group mean of 14.22 dollars). At endline 2, we find that there is an increase in formal borrowing (mainly microfinance borrowing), but this different disappears by endline 3). By endline 3, households in the treatment group thus appear to be in a much better financial position.

2.5 Labor Supply

Part of the mechanism underlying poverty traps is low labor supply. At baseline, each adult in the households spent on average only 169 minutes per day, or less than 3 hours, on a productive activity. One of the central ideas of the program is that providing these households with a productive asset will make it possible for them to work longer hours.

Table 6 and Figure 6 show how adults in the treatment and control households report allocating their time across work, leisure and household chores. Adults in the treatment households did increase the quantity of time spent working by an additional hour per day in the first endline and an additional 23min a day in the second endline (significant at 1% and 5% levels, respectively). At the third endline, adults in the treatment households spend an additional half an hour working (significant at the 1% level). In the first two endlines, the result is primarily driven by time spent tending to livestock. However, by endline 3 we also see significant increases in time spent on agriculture and (non agricultural) business activities. Contrary to Bandiera et al (2015), we don't see a significant decline in paid labor. This is consistent with the large increase in livestock revenue, and business income discussed below.

2.6 Health and Self-reported Well-being

A health and well-being module was administered to each adult member of the household. The results are reported in Table 7 (depicted in Figure 7). We find no significant impact on the

probability that a family member has not missed any work days during the past month. However, we find that by the third endline the Activities of Daily Living Score is more 7% larger for individuals in the treatment group relative to the control group. Furthermore, individual's (self-reported) perception of their physical health is also 6% higher in the treatment group. Both these findings are significant at the 1%

We also find significant improvements on individuals' mental health. We find that individuals' self-reported happiness (higher is better) is about 10% higher in the treatment group, relative to the control group by the third endline. In addition, we find that by the third endline individuals in the treatment group are less likely to have experienced a prolonged period of worry. Finally, we aggregate these outcomes by constructing a stress index, which is a weighted average of the standardized mental health variables including the lack of emotional distress, self-perception of life, and whether or not an individual has experienced a prolonged period of worry in the past year. Referring back to Table 1 and Figure 1, again, by the third endline, the stress index is 0.16 SDs higher (indicating lower stress). Interestingly, these mental health effects were significantly positive in endline 1, and reverted to zero in endline 2, suggestive of a possible "happiness treadmill". But by endline 3, they are all positive again, and larger than in endline 1.

2.7 Political Involvement and Women's Empowerment

Finally, Table 8 looks at measures of knowledge and empowerment. We only collected detailed information on women's empowerment during the first endline. However, we find no significant differences between the treatment and control groups at the time of the first endline.

With regards to the results on political involvement, we find positive and significant impacts at the time of the second endline, however these do not persist.

3 Conclusion

We find that the program has lasting large and positive impacts on those who were offered to participate, which seems to grow particularly rapidly between endline 2 and endline 3. By endline 3, most impacts are larger than they were at endline 1, and beneficiaries are richer, happier, and healthier. Our next step is to ask, how did that happen? What is the exact mechanism that seems to have been set in motion by the program? How do we explain relative stability of program effect between endline 1 and 2, and explosion by endline 3?

As a small step in that direction, Figures 8-10 plot the treatment effects at endline 3 by quantile for consumption, assets, and income and revenues. The treatment effects are sharply increasing across quantiles, and for all outcomes. However, very interestingly, the same pattern does not hold when the treatment effects are plotted by individuals' position in the distribution of consumption

at baseline. In other words while there is heterogeneity in the treatment effect, it is not predicted by baseline levels of consumption, i.e. it is not the less poor (in this extremely poor population) that benefit most from the program. Therefore the most naive version of the standard threshold based theory of poverty traps does not work—since the impact of the program should be bigger for those already closer to that threshold. Understanding what model does fit is the next step in the agenda.

Bibliography

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Table 0A: Baseline Balance

	Treatment Mean	Control Mean	$X_i = \alpha + \beta T_i + \epsilon_i$	Obs
<i>Household Level Variables</i>				
Consumption per capita, month	37.751	38.162	-0.881 (1.448)	978
Everyone in HH gets enough food everyday	0.105	0.114	-0.008 (0.019)	978
No adults skipped meals	0.086	0.088	0.004 (0.018)	978
Agricultural Profits (last month)	0.003	-0.194	0.207 (0.173)	978
Nonfarm Microenterprise Income (last month)	29.690	20.446	5.849 (10.308)	978
Paid Income (last month)	56.255	49.704	5.797 (3.589)	978
Self-Reported Economic Status (1-10)	2.012	1.925	0.065 (0.075)	978
Total Outstanding Loans	209.026	207.929	-7.682 (26.223)	970
Total Savings (last month)	2.175	3.789	-2.129 (2.572)	968
<i>Adult Level Variables</i>				
Minutes spent on productive activities in last day	168.190	170.791	-0.702 (9.910)	1731
Member has not missed any days due to illness, last month	0.476	0.512	-0.045 (0.024)	1731
Activities of Daily Living Score	0.603	0.593	0.010 (0.017)	1731
Self-reported happiness	1.682	1.631	0.040 (0.038)	1730
Member has not experienced a period of worry in last year	0.203	0.199	-0.004 (0.019)	1725

Notes: 1. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

2. For household level outcomes: Robust standard errors are shown in parentheses.

3. For adult level outcomes: Standard errors are clustered at the household level.

4. All specifications include hamlet-level fixed effects.

Table 0B: Differential Attrition

	Endline 1		Endline 2		Endline 3	
	Attrit HH (1)	Standard Error (2)	Attrit HH (3)	Standard Error (4)	Attrit HH	Standard Error
<i>Panel A: Attrition in Treatment vs Control</i>						
Treatment	-0.01	(0.02)	-0.02	(0.02)	-0.00	(0.00)
Treatment Mean	0.161		0.096		0.004	
Control Mean	0.174		0.123		0.005	
<i>Panel B: Attrition & BL Characteristics in Treatment vs Control Attrition HH X Treatment</i>						
<i>Household Level Variables</i>						
Consumption per capita, month	-0.39	(4.02)	-1.59	(4.89)	1.95	(29.08)
Everyone in HH gets enough food everyday	-0.01	(0.05)	-0.04	(0.07)	-0.40	(0.38)
No adults skipped meals	0.02	(0.05)	0.05	(0.06)	-0.40	(0.35)
Agricultural Profits (last month)	-0.29	(0.48)	-0.54	(0.59)	-0.33	(3.58)
Nonfarm Microenterprise Income (last month)	-6.06	(28.65)	-25.48	(35.00)	-64.42	(198.20)
Paid Income (last month)	13.13	(9.97)	-4.80	(12.16)	96.72	(71.47)
Self-Reported Economic Status (1-10)	0.03	(0.21)	0.31	(0.25)	-1.02	(1.49)
Total Outstanding Loans	-111.79	(72.91)	-34.87	(88.31)	82.80	(539.45)
Total Savings (last month)	-12.28	(7.12)	-18.13 **	(8.63)	0.83	(29.55)
<i>Adult Level Variables</i>						
Minutes spent on productive activities in last day	19.40	(28.19)	-19.32	(34.52)	19.38	(187.79)
Member has not missed any days due to illness, last month	0.04	(0.07)	0.00	(0.08)	-1.00 **	(0.46)
Activities of Daily Living Score	0.01	(0.05)	0.00	(0.06)	-0.55	(0.32)
Self-reported happiness	0.12	(0.11)	0.15	(0.13)	0.12	(0.72)
Member has not experienced a period of worry in last year	0.02	(0.05)	-0.03	(0.06)	0.29	(0.35)

Notes: 1. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

2. For household level outcomes: Robust standard errors are shown in parentheses.

3. For adult level outcomes: Standard errors are clustered at the household level.

4. All specifications include hamlet-level fixed effects.

Table 1: Household Indexed Variables

	Asset Index	Productive Asset Index	Household Asset Index	Total per capita Consumption, standardized	Food Security Index	Financial Inclusion Index	Income and Revenues Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Panel A: Endline 1</i>							
Treatment	0.891*** (0.121)	0.881*** (0.119)	0.125 (0.120)	0.330*** (0.080)	0.184*** (0.048)	-0.000 (0.042)	0.302*** (0.088)
Control Mean	0.18	0.15	0.34	0.00	0.35	0.12	0.08
Baseline Mean	-0.00	-0.00	0.00	-0.01	-0.00	0.00	.
Observations	813	813	813	813	812	812	814
<i>Panel B: Endline 2</i>							
Treatment	1.004*** (0.135)	0.961*** (0.133)	0.452*** (0.163)	0.249*** (0.067)	0.251*** (0.059)	0.194*** (0.062)	0.829* (0.451)
Control Mean	0.34	0.26	0.80	-0.00	0.94	0.29	0.08
Baseline Mean	-0.00	-0.00	0.00	-0.01	-0.00	0.00	.
Observations	875	875	875	875	875	875	875
<i>Panel C: Endline 3</i>							
Treatment	0.933*** (0.145)	0.827*** (0.134)	1.089*** (0.291)	0.359*** (0.066)	0.433*** (0.062)	0.193 (0.135)	0.779*** (0.108)
Control Mean	0.77	0.39	3.61	-0.00	1.09	0.66	0.00
Baseline Mean	-0.00	-0.00	0.00	-0.01	-0.00	0.00	.
Observations	870	870	870	870	870	870	872

Notes: 1. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

2. Robust standard errors are shown in parentheses.

3. All specifications include baseline controls, and hamlet-level fixed effects.

4. Indices are standardized against the baseline sample, with the exception of the income and revenues index which is standardized against the control group at time t, because livestock revenue was measured differently at baseline.

Table 2: Adult Indexed Variables

	Physical Health Index	Mental Health Index	Political Involve- ment Index	Women's Empower- ment Index	Stress Index
	(1)	(2)	(3)	(4)	(5)
<i>Panel A: Endline 1</i>					
Treatment	0.064** (0.027)	0.120*** (0.029)	-0.004 (0.034)	0.057 (0.038)	0.079* (0.040)
Control Mean	0.12	0.32	-0.05	-0.28	0.35
Baseline Mean	-0.00	-0.00	0.00	0.00	0.00
Observations	1,504	1,502	1,504	1,504	1,501
<i>Panel B: Endline 2</i>					
Treatment	0.030 (0.027)	0.013 (0.036)	0.023 (0.032)		0.009 (0.038)
Control Mean	0.21	0.75	0.13		0.61
Baseline Mean	-0.00	-0.00	0.00		0.00
Observations	1,757	1,757	1,759	.	1,757
<i>Panel C: Endline 3</i>					
Treatment	0.125*** (0.030)	0.244*** (0.041)	0.032 (0.027)		0.163*** (0.038)
Control Mean	0.57	1.10	0.27		0.62
Baseline Mean	-0.00	-0.00	0.00		0.00
Observations	1,920	1,914	1,939	.	1,912

- Notes: 1. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$
2. Standard errors, shown in parentheses, are clustered at the household level.
3. All specifications include baseline controls, and hamlet-level fixed effects.
4. All indices are standardized against the baseline sample.

Figure 1: Household-Level Indexed Variables

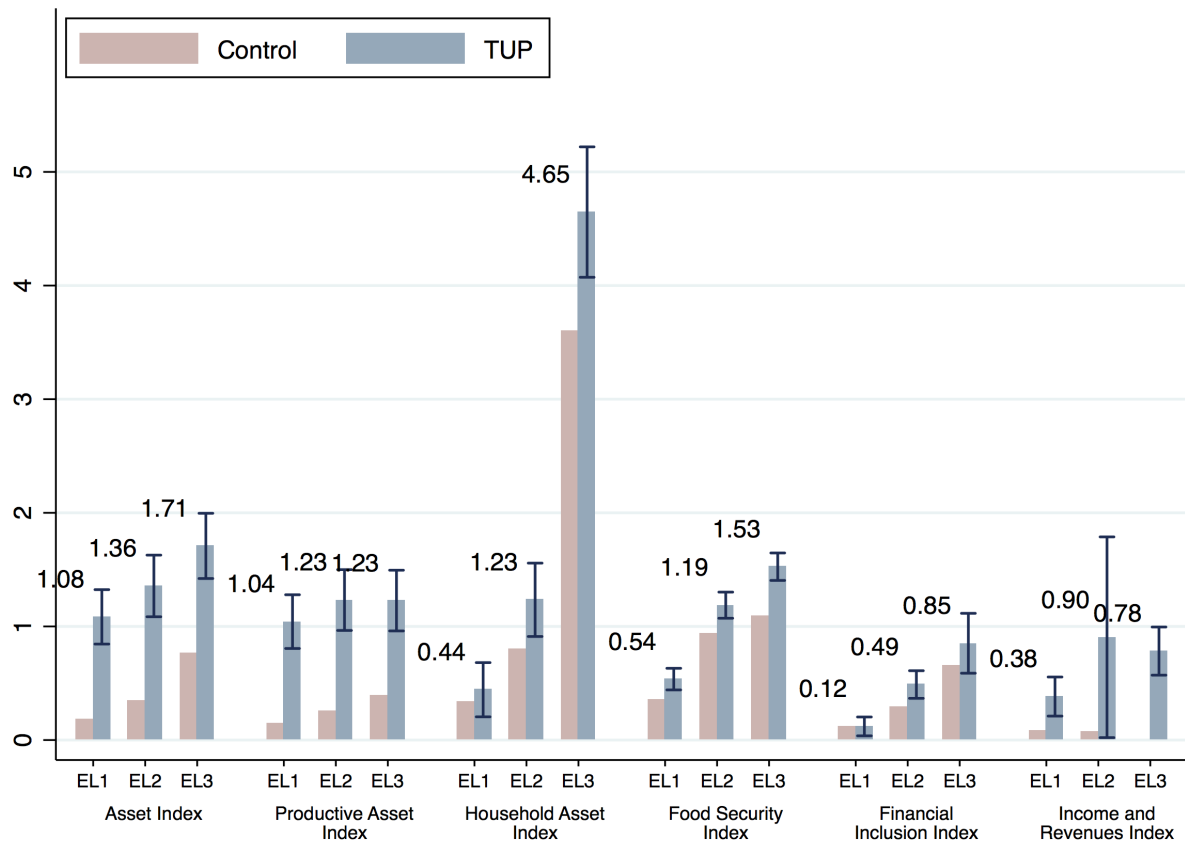


Figure 2: Adult-Level Indexed Variables

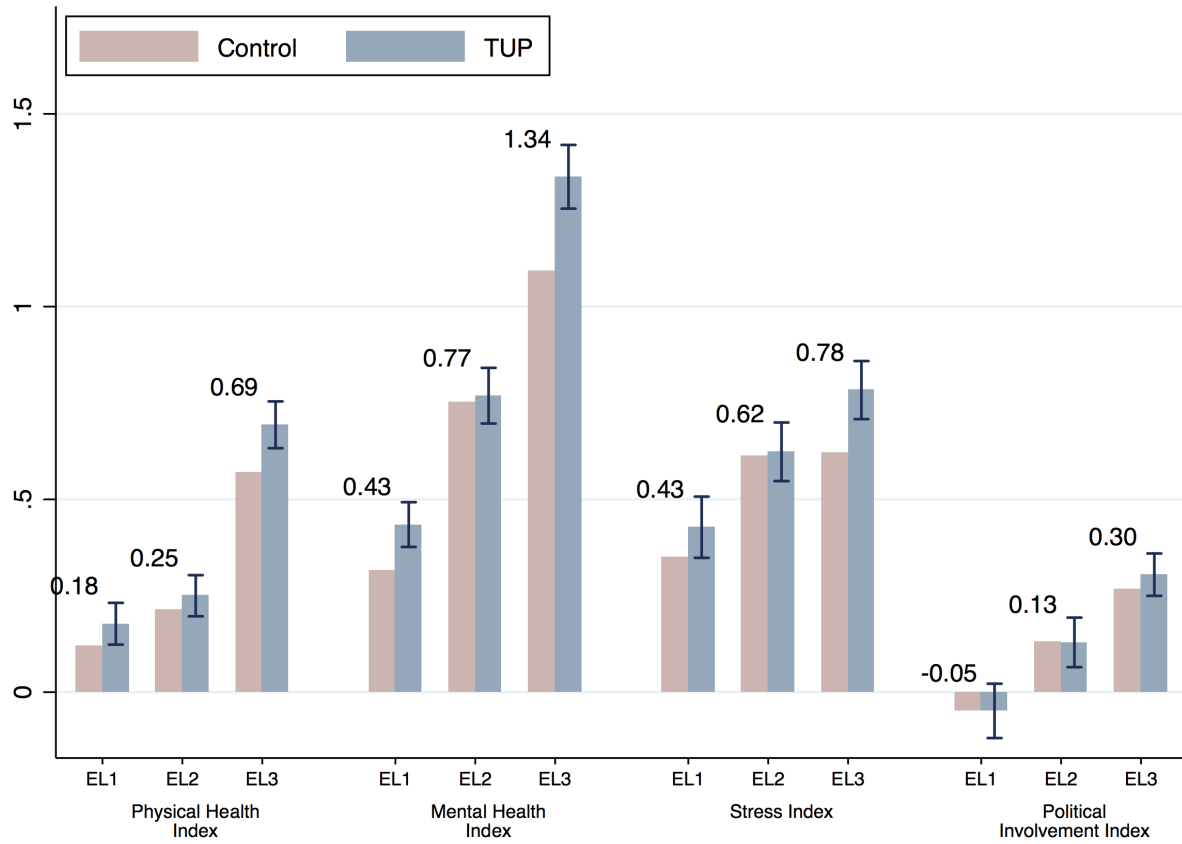


Table 3: Consumption & Food Security

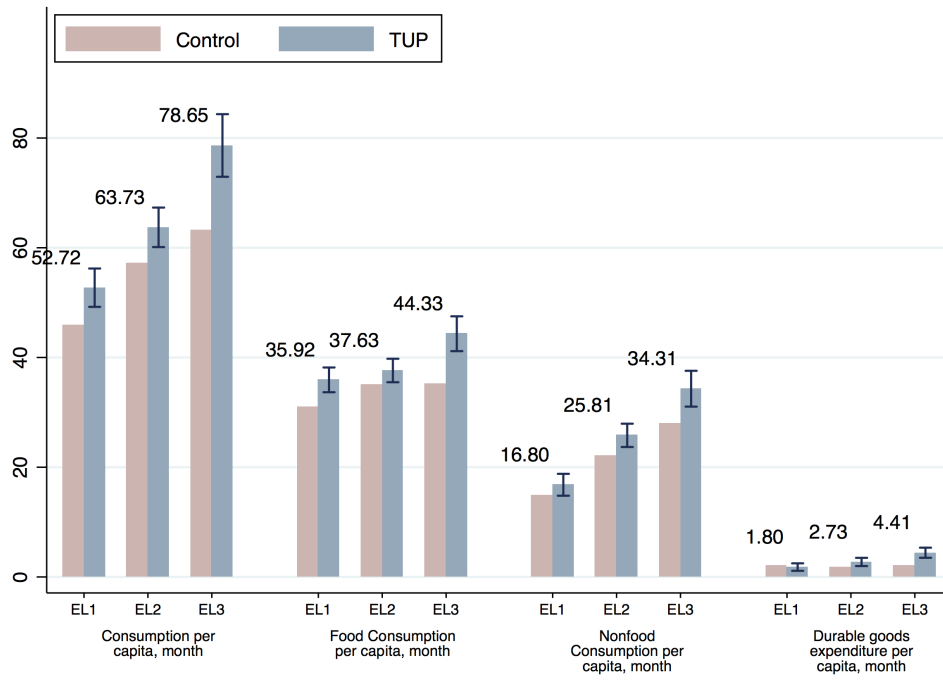
	Consumption per capita, month	Food Consumption per capita, month	Nonfood Consumption per capita, month	Durable goods expenditure per capita, month	Everyone in HH gets enough food everyday	No adults skipped meals	No one in the HH went a whole day without food	No children skipped meals	Everyone in the HH regularly eats 2 meals per day
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>Panel A: Endline 1</i>									
Treatment	7.036*** (1.711)	5.013*** (1.113)	1.934* (1.004)	-0.328 (0.349)	0.074*** (0.025)	0.078*** (0.025)	0.128*** (0.030)	0.032 (0.034)	0.012 (0.019)
Control Mean	45.88	31.00	14.88	2.13	0.11	0.10	0.68	0.75	0.91
Baseline Mean	37.95	24.96	12.92	0.91	0.11	0.09	0.28	0.51	0.77
Observations	813	813	813	812	812	811	811	613	812
<i>Panel B: Endline 2</i>									
Treatment	6.595*** (1.782)	2.730** (1.067)	3.603*** (1.050)	0.821** (0.359)	0.141*** (0.034)	0.138*** (0.034)	0.038* (0.023)	0.085*** (0.025)	0.026** (0.013)
Control Mean	57.17	35.00	22.19	1.80	0.42	0.42	0.85	0.86	0.95
Baseline Mean	37.95	24.96	12.92	0.91	0.11	0.09	0.28	0.51	0.77
Observations	875	872	872	875	875	875	875	636	875
<i>Panel C: Endline 3</i>									
Treatment	15.719*** (2.872)	9.118*** (1.610)	6.518*** (1.640)	2.279*** (0.471)	0.205*** (0.032)	0.241*** (0.032)	0.095*** (0.022)	0.045* (0.026)	0.087*** (0.021)
Control Mean	63.20	35.22	27.98	2.14	0.59	0.55	0.83	0.87	0.85
Baseline Mean	37.95	24.96	12.92	0.91	0.11	0.09	0.28	0.51	0.77
Observations	870	869	869	870	870	870	870	549	870

Notes: 1. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

2. Robust standard errors are shown in parentheses.

3. All specifications include baseline controls, and hamlet-level fixed effects.

Figure 3: Consumption



Food Security

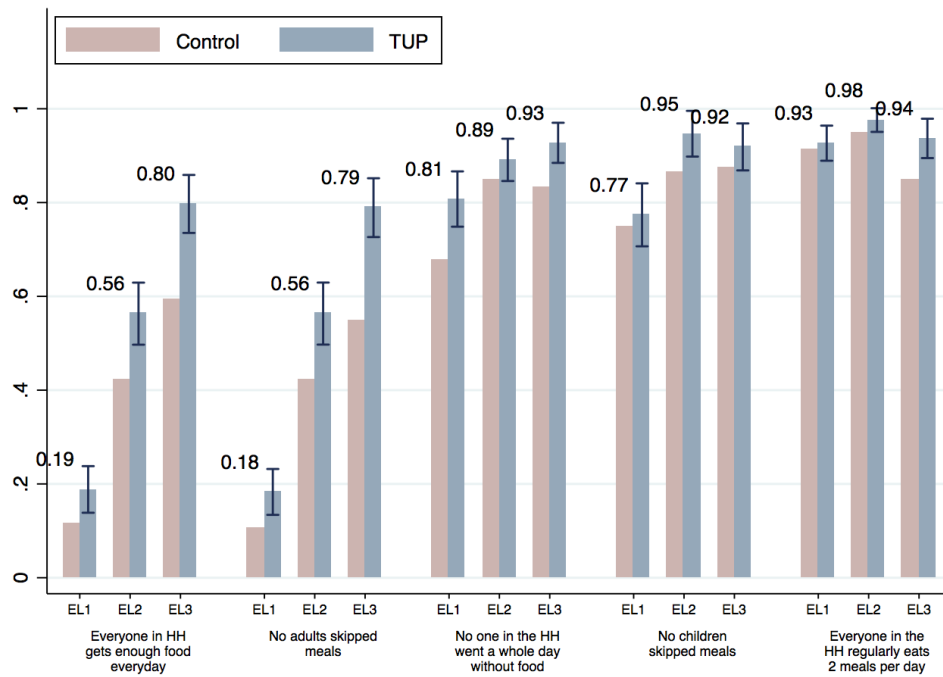


Table 4: Income and Revenues

	Livestock Revenue (avg monthly)	Agricultural Profits (last month)	Nonfarm Microen- terprise Income (last month)	Paid Income (last month)	Paid Income (in a typical month)	Self- Reported Economic Status (1-10)
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: Endline 1</i>						
Treatment	9.555*** (2.181)	-0.387 (0.447)	2.415 (3.008)	1.448 (4.488)	5.008 (5.057)	0.204*** (0.071)
Control Mean	3.11	-0.24	23.50	45.57	54.92	2.77
Baseline Mean	0.00	-0.09	25.30	53.15	53.15	1.97
Observations	814	814	814	814	814	811
<i>Panel B: Endline 2</i>						
Treatment	7.156*** (2.471)	3.406 (2.863)	10.620** (5.035)	6.076 (6.426)	0.700 (8.407)	0.297*** (0.080)
Control Mean	7.44	-0.41	35.37	68.67	128.29	3.36
Baseline Mean	0.00	-0.09	25.30	53.15	53.15	1.97
Observations	875	875	875	875	875	875
<i>Panel C: Endline 3</i>						
Treatment	25.794*** (4.790)		51.802*** (10.013)	30.950** (13.192)	47.749*** (17.225)	1.573*** (0.141)
Control Mean	9.01		57.52	114.31	193.48	4.74
Baseline Mean	0.00		25.30	53.15	53.15	1.97
Observations	872	.	802	872	872	870

Notes: 1. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

2. Robust standard errors are shown in parentheses.

3. All specifications include baseline controls, and hamlet-level fixed effects.

Figure 4: Income and Revenues

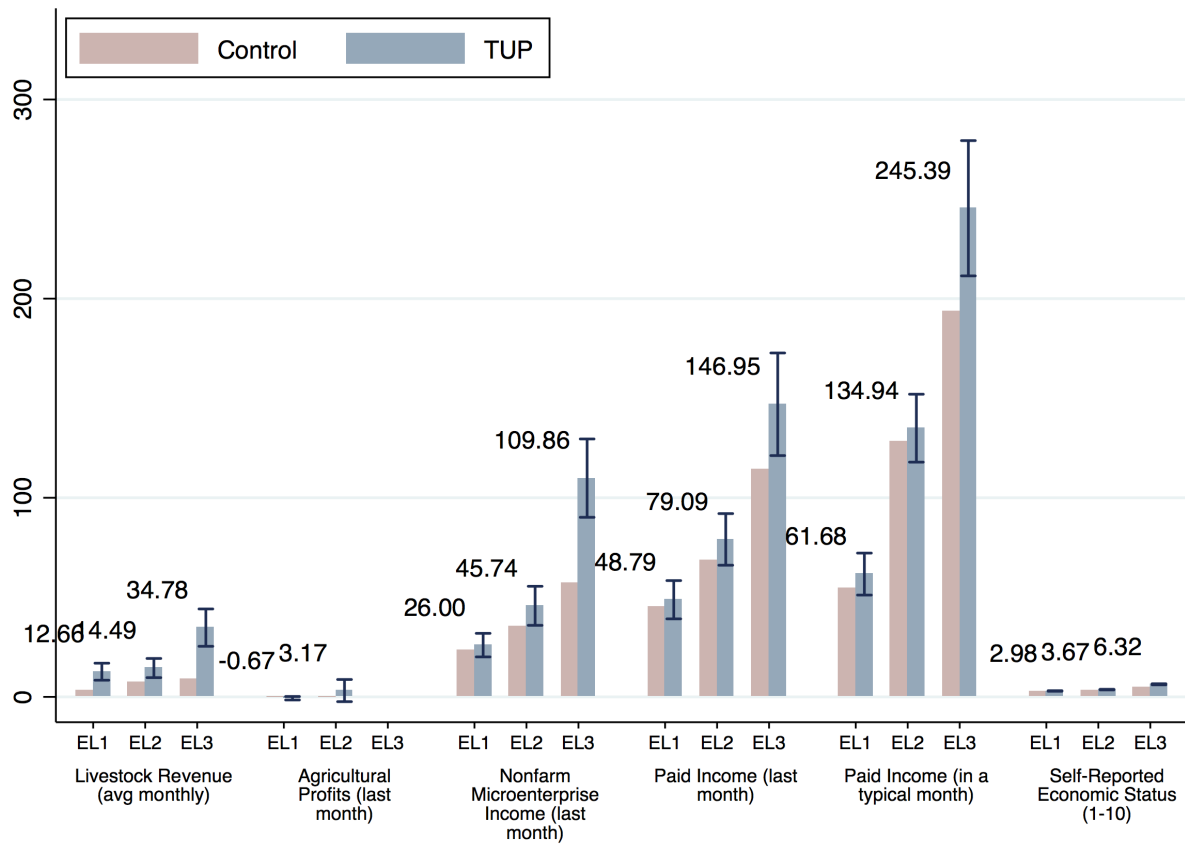


Table 5: Financial Inclusion

	Total Out- standing Loans	Informal Loans (Outstanding)	Formal Loans (Outstanding)	Total Savings (last month)
	(1)	(2)	(3)	(4)
<i>Panel A: Endline 1</i>				
Treatment	-17.191 (32.608)	-12.848 (30.393)	-8.549 (8.550)	1.788** (0.864)
Control Mean	320.50	295.73	24.71	1.52
Baseline Mean	208.50	199.86	8.95	2.94
Observations	812	808	812	805
<i>Panel B: Endline 2</i>				
Treatment	109.209*** (35.388)	32.686 (28.719)	76.383*** (17.056)	4.040 (3.202)
Control Mean	269.83	189.82	77.21	19.79
Baseline Mean	208.50	199.86	8.95	2.94
Observations	875	875	875	875
<i>Panel C: Endline 3</i>				
Treatment	-53.453 (86.325)	-37.804 (78.354)	-13.235 (30.254)	18.644*** (5.268)
Control Mean	610.27	434.44	168.10	14.22
Baseline Mean	208.50	199.86	8.95	2.94
Observations	870	870	870	846

Notes: 1. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

2. Robust standard errors are shown in parentheses.

3. All specifications include baseline controls, and hamlet-level fixed effects.

Figure 5: Financial Inclusion

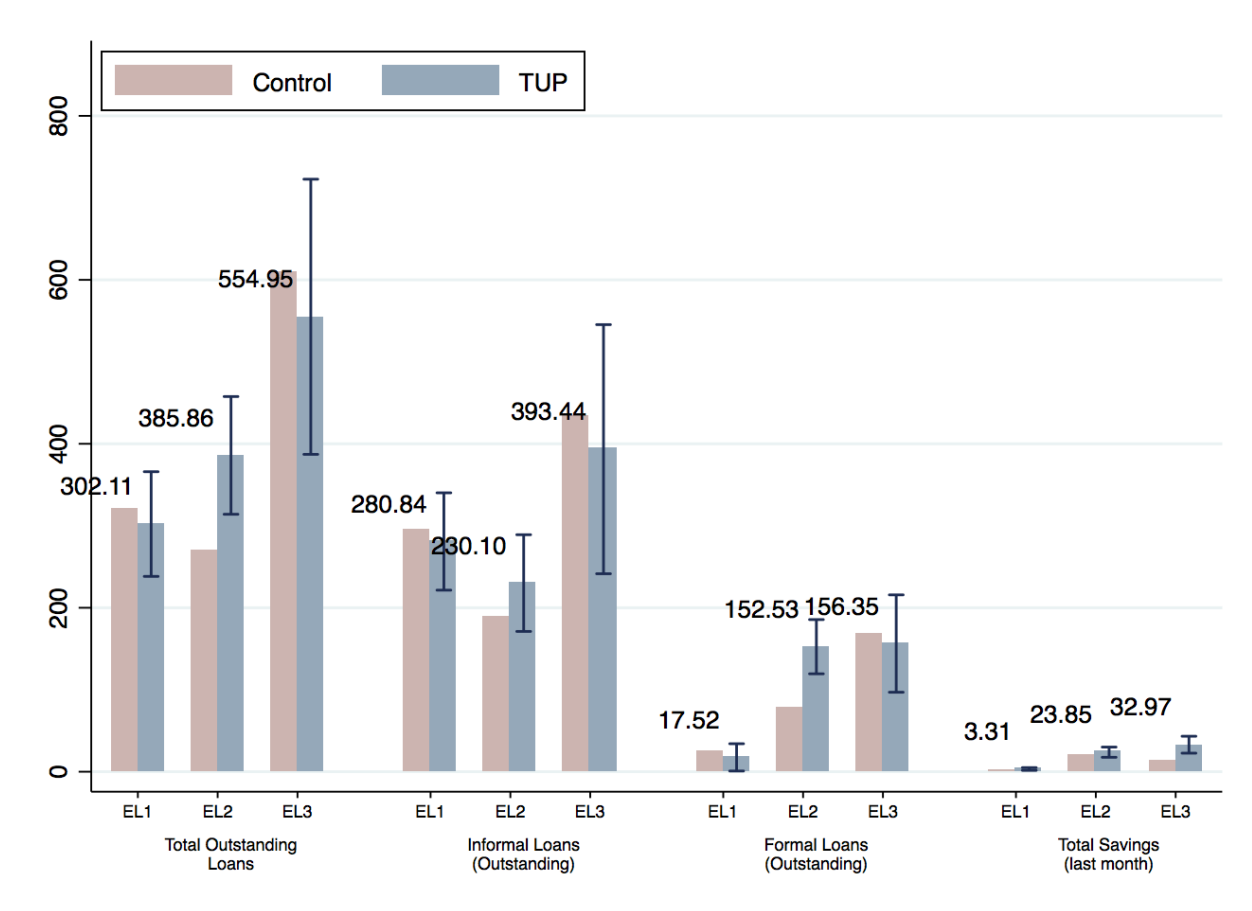


Table 6: Time Use

	Minutes spent on productive activities in last day	Minutes spent on agriculture	Minutes spent on livestock activities last day	Minutes spent on own business in last day	Minutes spent on paid labor in last day
	(1)	(2)	(3)	(4)	(5)
<i>Panel A: Endline 1</i>					
Treatment	58.152*** (10.192)	1.216 (1.614)	64.325*** (4.965)	5.826 (6.881)	-13.116 (8.768)
Control Mean	216.28	4.33	32.55	61.46	117.94
Baseline Mean	169.40	1.37	15.81	19.19	133.02
Observations	1,504	1,504	1,503	1,503	1,504
<i>Panel B: Endline 2</i>					
Treatment	22.766** (9.180)	-0.108 (1.874)	28.314*** (3.587)	1.546 (6.085)	-7.387 (8.405)
Control Mean	226.86	5.87	27.89	61.03	132.06
Baseline Mean	169.40	1.37	15.81	19.19	133.02
Observations	1,756	1,756	1,756	1,756	1,756
<i>Panel C: Endline 3</i>					
Treatment	33.521*** (8.940)	8.749*** (2.081)	14.183*** (2.646)	14.199** (5.759)	-3.098 (7.709)
Control Mean	160.42	4.71	19.01	42.47	94.60
Baseline Mean	169.40	1.37	15.81	19.19	133.02
Observations	1,929	1,915	1,915	1,914	1,929

Notes: 1. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

2. Standard errors, shown in parentheses, are clustered at the household level.

3. All specifications include baseline controls, and hamlet-level fixed effects.

Figure 6: Time Use

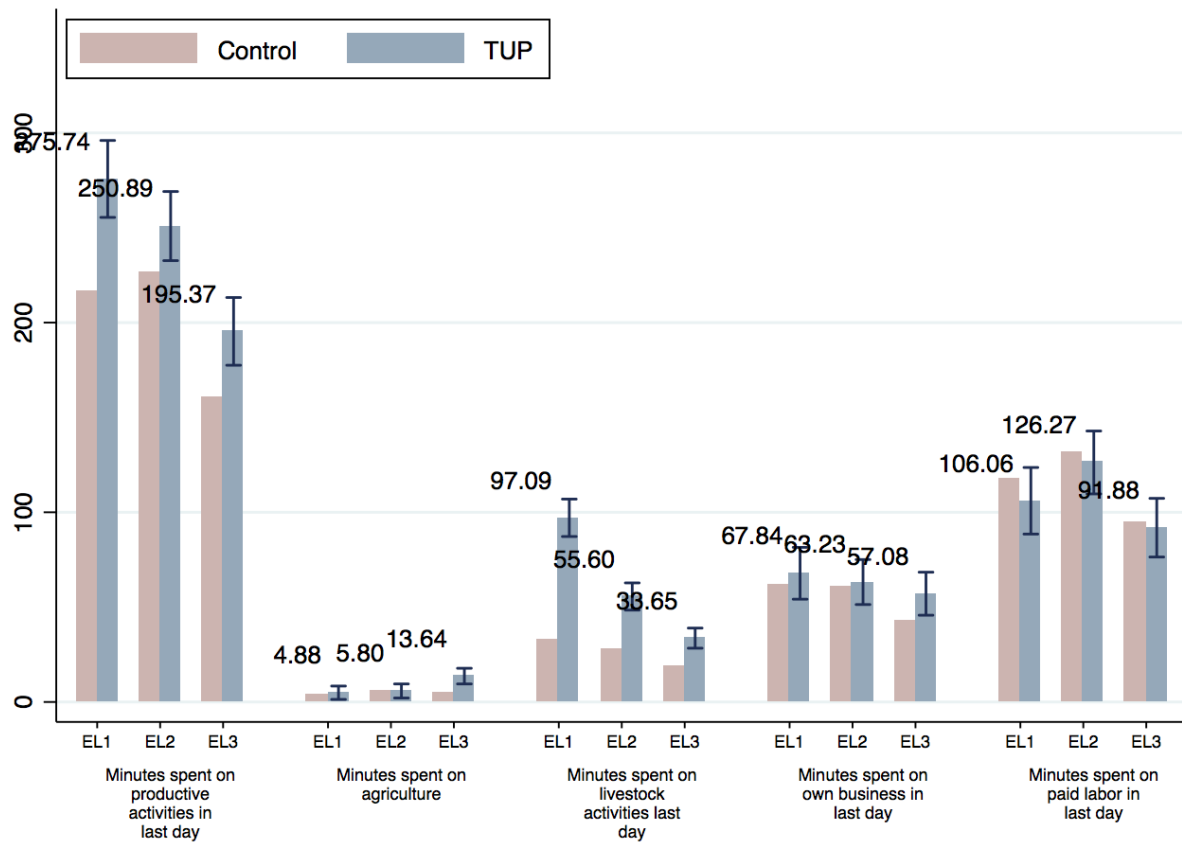


Table 7: Health

	Member has not missed any days due to illness, last month	Activities of Daily Living Score	Self- perception of physical health (1-10)	Self- reported happiness	Member has not ex- perienced a period of worry in last year
	(1)	(2)	(3)	(4)	(5)
<i>Panel A: Endline 1</i>					
Treatment	0.040 (0.025)	0.026* (0.014)	0.027 (0.034)	0.136*** (0.041)	0.043*** (0.016)
Control Mean	0.62	0.65	2.29	2.42	0.07
Baseline Mean	0.49	0.60	2.31	1.66	0.20
Observations	1,504	1,504	1,503	1,501	1,499
<i>Panel B: Endline 2</i>					
Treatment	0.002 (0.024)	0.016 (0.014)	0.035 (0.027)	0.051 (0.036)	-0.014 (0.024)
Control Mean	0.64	0.63	2.55	2.77	0.32
Baseline Mean	0.49	0.60	2.31	1.66	0.20
Observations	1,757	1,757	1,756	1,756	1,757
<i>Panel C: Endline 3</i>					
Treatment	0.016 (0.021)	0.049*** (0.014)	0.190*** (0.047)	0.295*** (0.043)	0.082*** (0.026)
Control Mean	0.68	0.68	3.36	3.13	0.55
Baseline Mean	0.49	0.60	2.31	1.66	0.20
Observations	1,915	1,920	1,914	1,913	1,911

Notes: 1. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

2. Standard errors, shown in parentheses, are clustered at the household level.

3. All specifications include baseline controls, and hamlet-level fixed effects.

Figure 7: Health

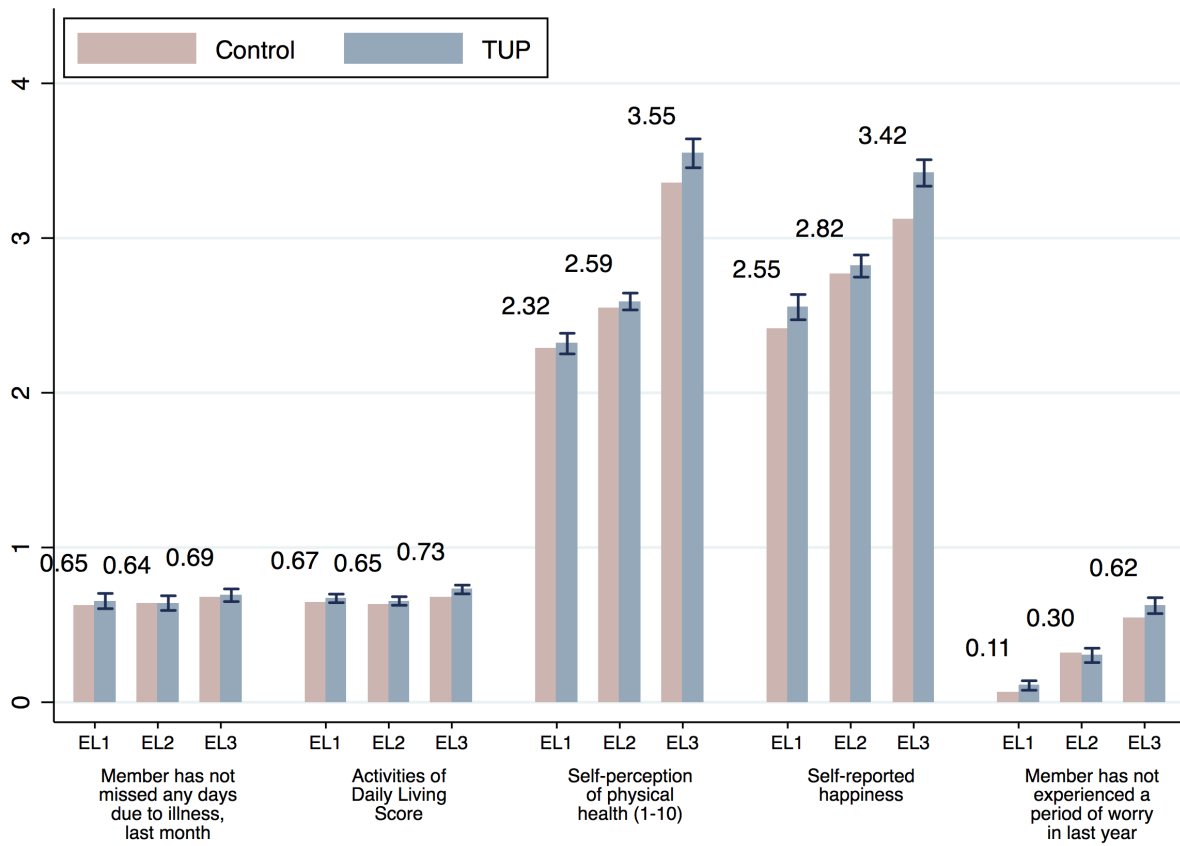


Table 8: Political Involvement

	Voted in Last Election	Has spoken to village leaders about concerns	Woman has major say on food decisions	Woman has major say on education decisions	Woman has major say on health decisions	Woman has major say on home im- provement decisions	Woman has major say on how to manage household finances
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Panel A: Endline 1</i>							
Treatment	-0.025 (0.018)	0.031 (0.024)	0.023 (0.018)	0.020 (0.015)	0.028 (0.017)	0.020 (0.015)	0.017 (0.014)
Control Mean	0.82	0.35	0.09	0.07	0.07	0.06	0.05
Baseline Mean	0.75	0.48	0.22	0.15	0.20	0.20	0.12
Observations	1,504	1,504	1,504	1,504	1,504	1,504	1,504
<i>Panel B: Endline 2</i>							
Treatment	-0.024 (0.017)	0.055** (0.023)					
Control Mean	0.83	0.52					
Baseline Mean	0.75	0.48					
Observations	1,756	1,759					
<i>Panel C: Endline 3</i>							
Treatment	0.025* (0.015)	0.005 (0.021)					
Control Mean	0.84	0.64					
Baseline Mean	0.75	0.48					
Observations	1,927	1,939					

Notes: 1. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$
2. Standard errors, shown in parentheses, are clustered at the household level.
3. All specifications include baseline controls, and hamlet-level fixed effects.

Figure 8: Treatment Effects by Quantile: Consumption

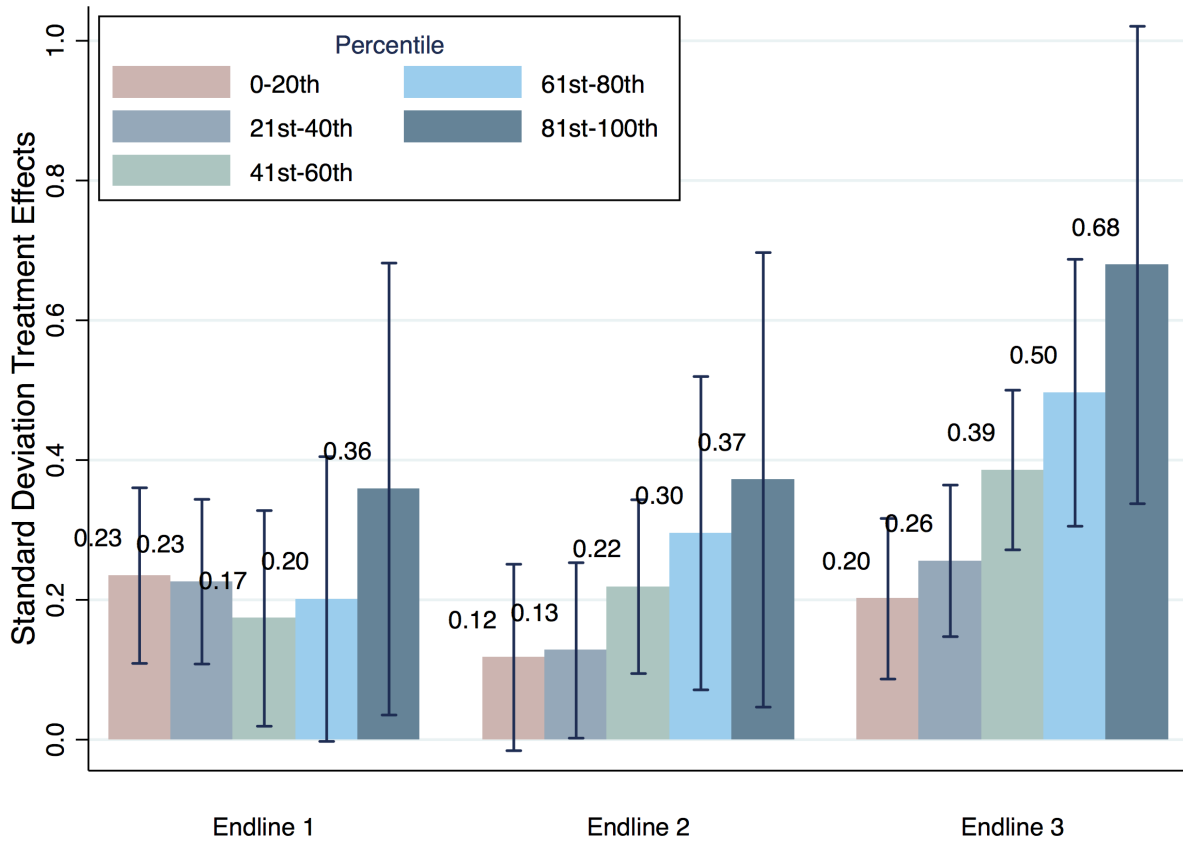


Figure 9: Treatment Effects by Quantile: Assets

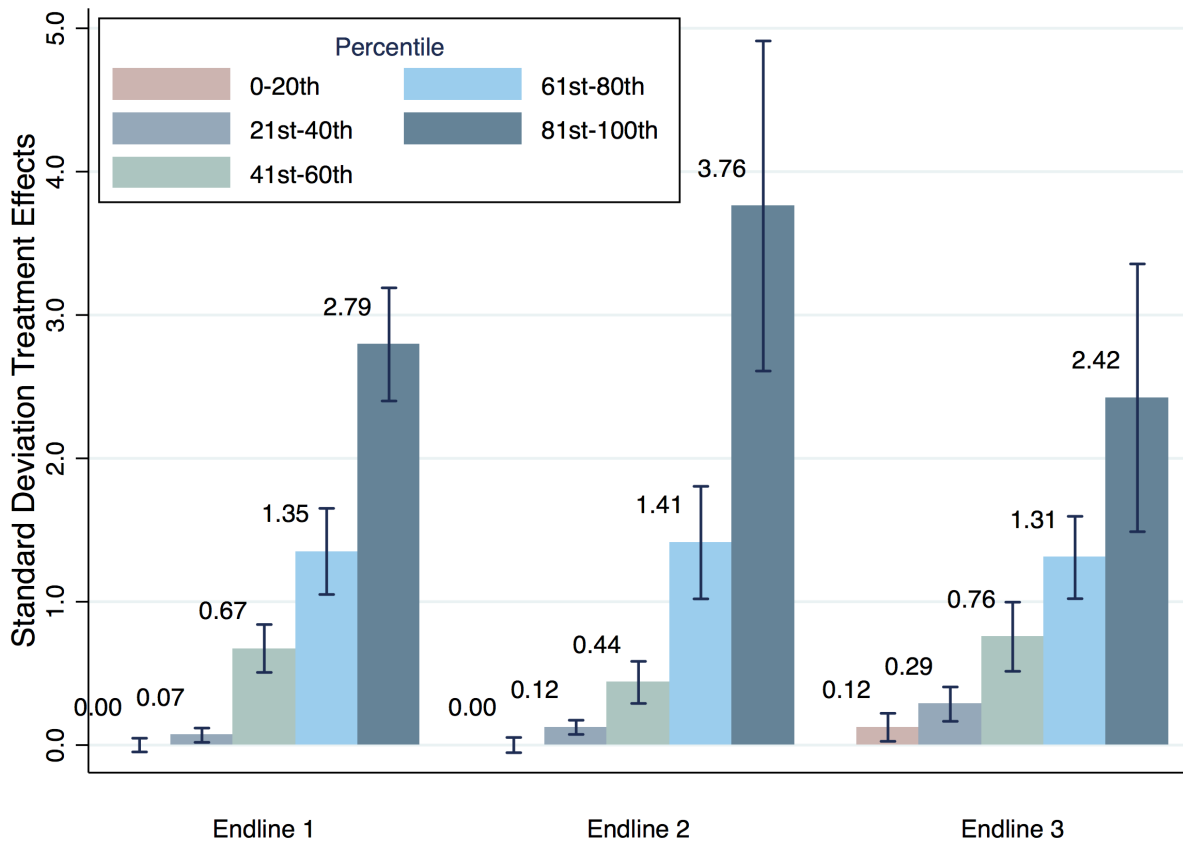


Figure 10: Treatment Effects by Quantile: Income and Revenues

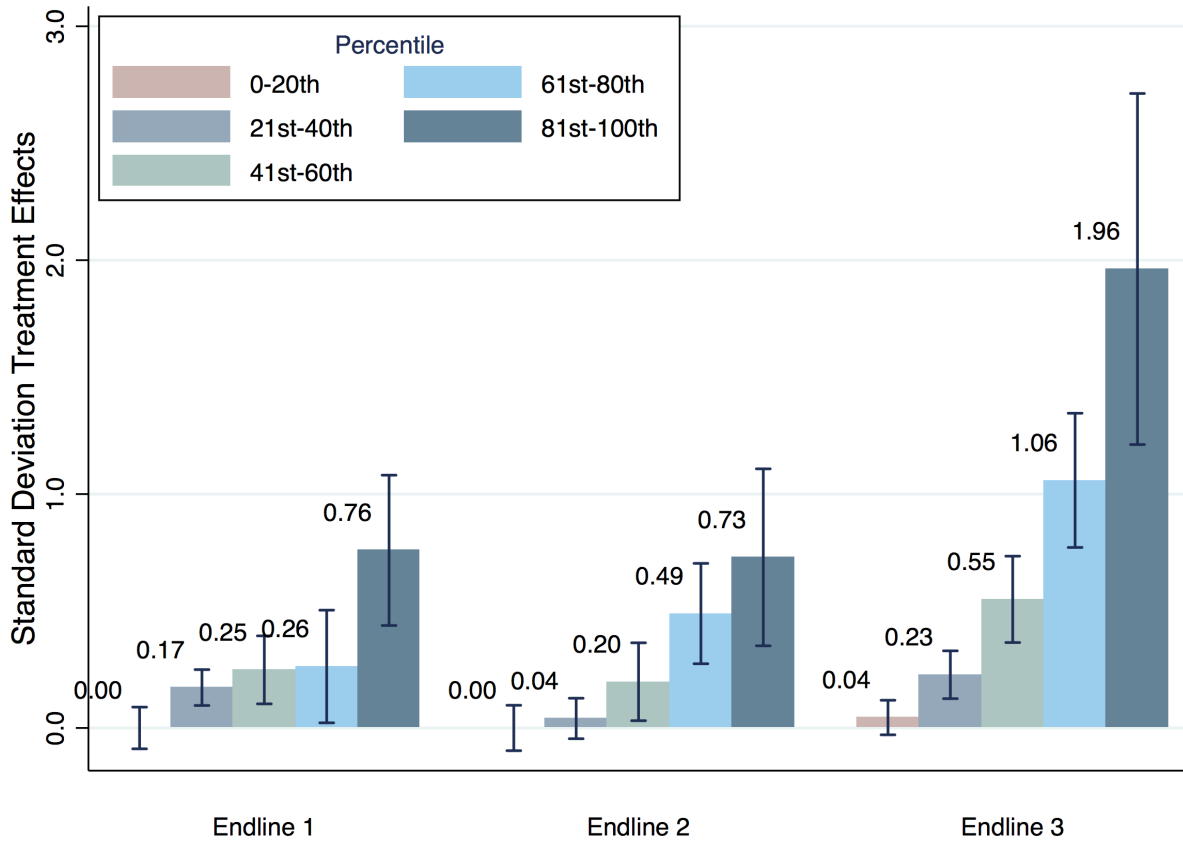


Figure 11: Treatment Effects by BL Consumption Level: Consumption

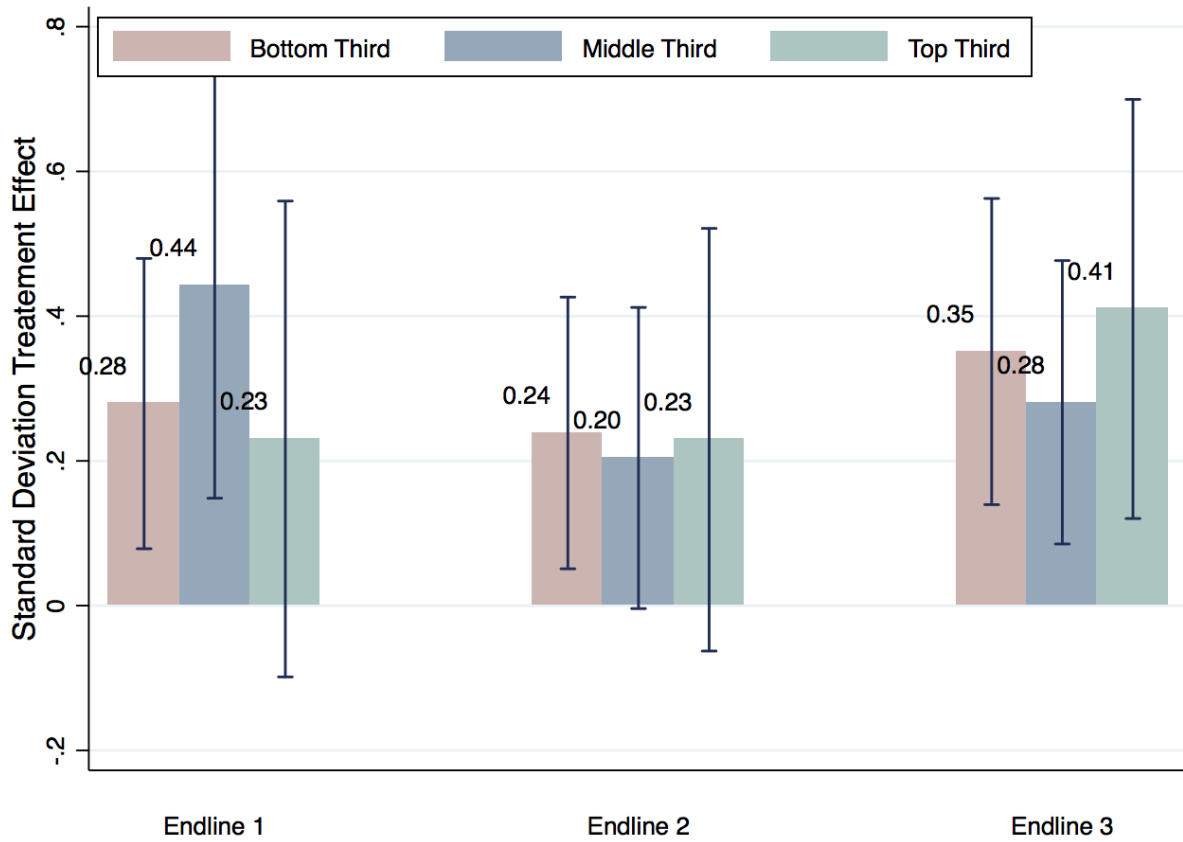


Figure 12: Treatment Effects by BL Consumption Level: Food Security

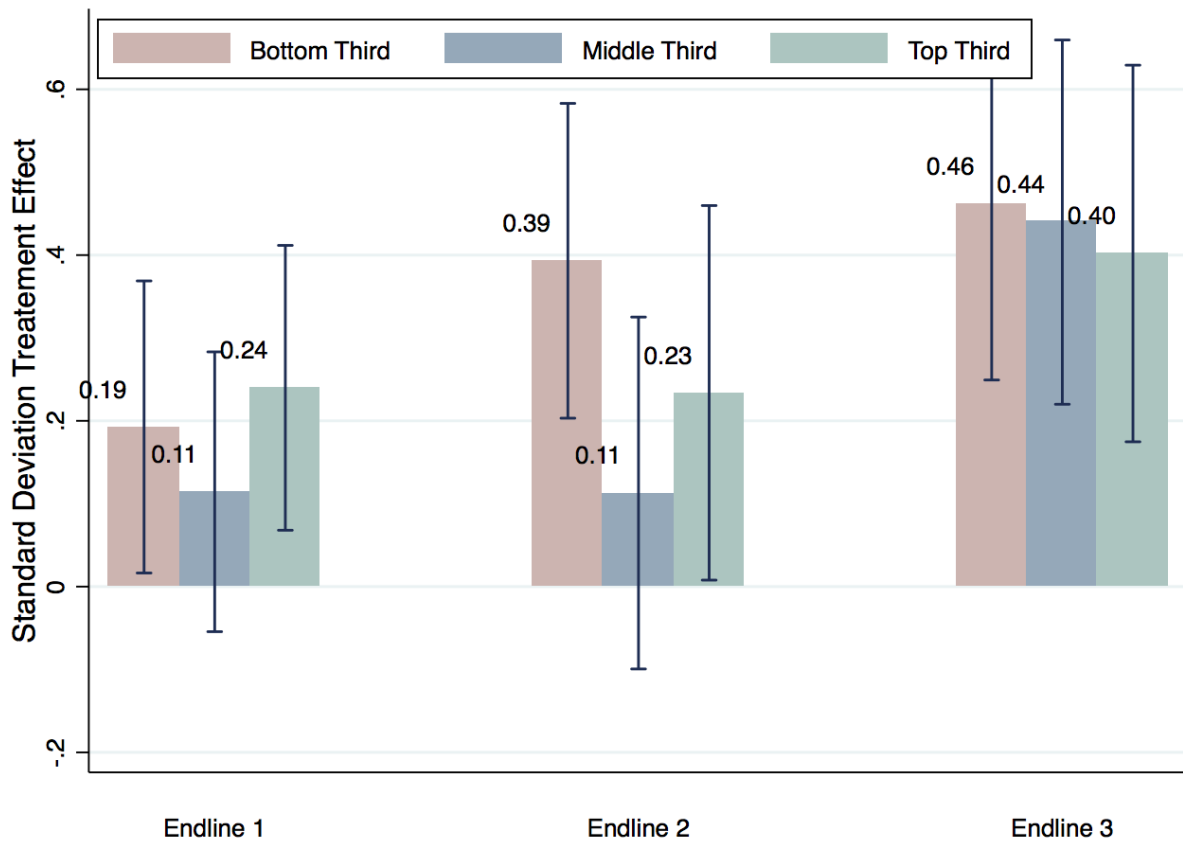


Figure 13: Treatment Effects by BL Consumption Level: Assets

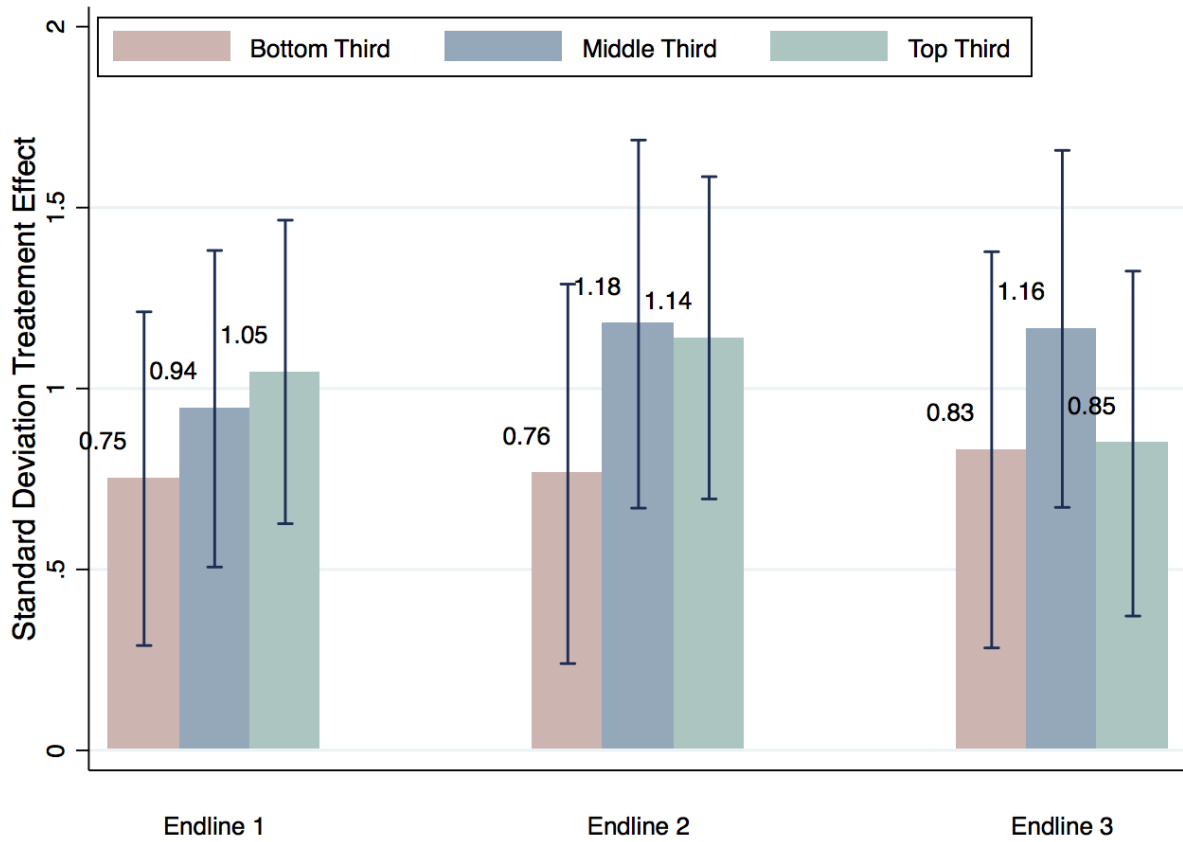


Figure 14: Treatment Effects by BL Consumption Level: Income & Revenues

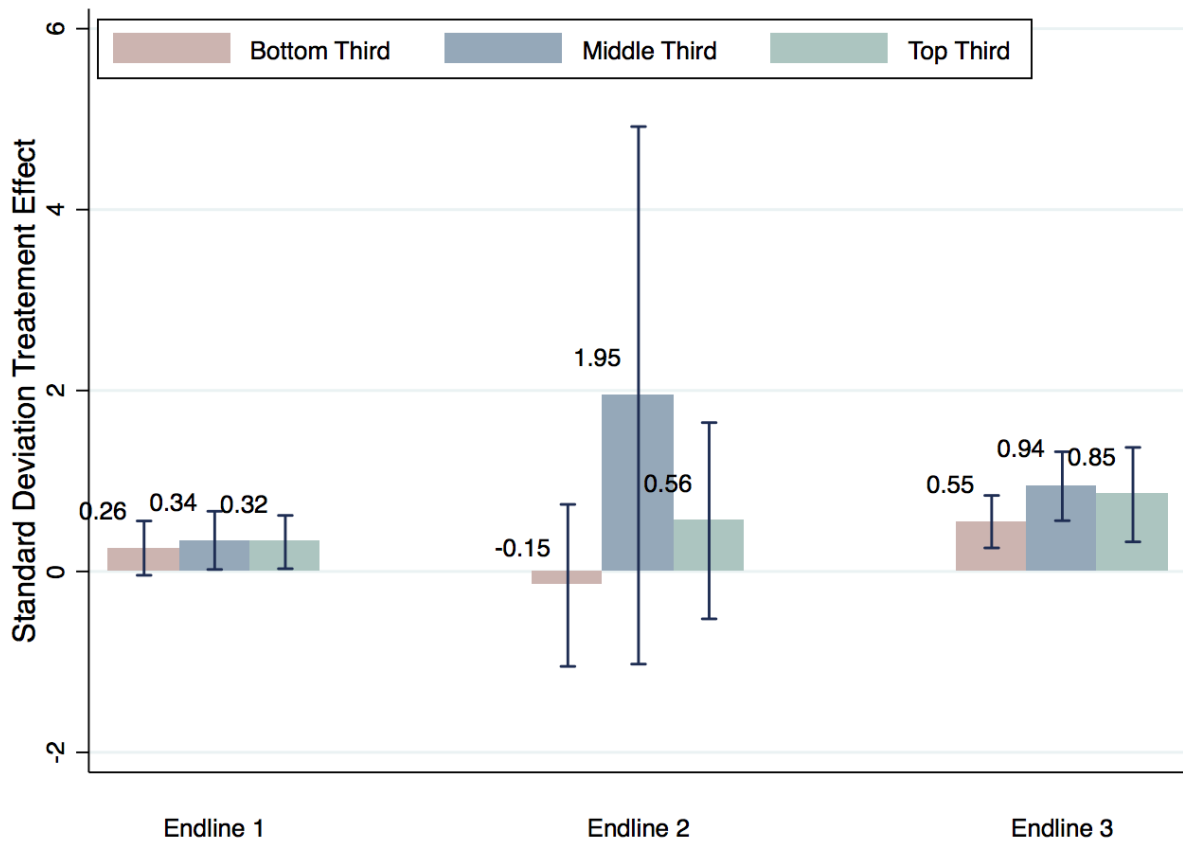


Figure 15: Treatment Effects by BL Consumption Level: Financial Inclusion

