

# Can Entrepreneurship Programs Transform the Economic Lives of the Poor?

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# Starting Point

- ▶ In rural South Asia the poorest women tend to be in dead-end, unskilled wage labor occupations (e.g. agricultural laborer, domestic servant) – shift towards self-employment as we move up wealth distribution
- ▶ Poorest are mainly illiterate and have limited demand for capital (e.g. microfinance)
- ▶ Do not feel capable of running a business
- ▶ Route out of poverty for these individuals unclear

# Starting Point



# Background

- ▶ Ultra-poor program – innovation of worlds largest NGO BRAC – assists poorest women with running small businesses
- ▶ Almost one million women being reached in Bangladesh
- ▶ BRAC introducing program to Africa, Afghanistan, Pakistan etc
- ▶ many other NGOs and governments copying the program (total 8 countries – see <http://graduation.cgap.org/>) – big new idea in development
- ▶ in India, two organizations (Bandhan and Trickle Up) piloting the program in West Bengal
- ▶ Program aims to exploit complementarity between capital and skills – poorest have neither

# Questions

- ▶ If both capital and skills are provided can poorest successfully run small businesses?
- ▶ If provide both do poorest shift hours towards running business and away from wage labor?
- ▶ If provide both do they decrease or increase hours worked?
- ▶ If provide both do their incomes and other measures of welfare improve?
- ▶ Are other poor affected by the program via wages and other general equilibrium effects?
- ▶ Is this approach cost-effective relative to alternatives (e.g. cash transfers)?

# Plan

- ▶ Describe program and evaluation design
- ▶ Describe economic lives of ultrapoor at baseline
- ▶ Occupational choice/labor supply theoretical framework
- ▶ Impact of program: average treatment effects
- ▶ Impact of program: heterogeneous treatment effects as a function of baseline occupational choice
- ▶ Impact of program: general equilibrium effects

# BRAC's Ultra-Poor Program

- ▶ STUP (Specially Targeted Ultra Poor), three key components:
  - ▶ asset transfer (livestock), average value 9,000TK (\$130)
  - ▶ enterprise training + weekly visits for the first 18 months
  - ▶ lessons in micro-finance + invitation to join after 18-24m
- ▶ Complementary components:
  - ▶ subsistence allowance for the first 40 weeks
  - ▶ monthly health visit
  - ▶ access to BRAC's legal services
- ▶ Outreach: aims to reach 870,000 households in 40 districts by 2011 at a cost of TK20,700 (\$300) per household.

# Identifying the 'Ultra-Poor'

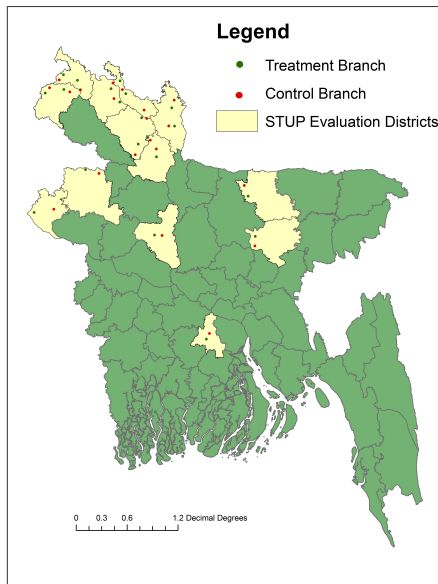
- ▶ BRAC Centre identifies the areas ⇒ BRAC branch offices identify the communities ⇒ Communities engage in participatory wealth ranking
- ▶ Everyone in the lowest wealth rank (5) is subject to further examination to verify exclusion/inclusion criteria
- ▶ Aim to target “ultra-poor” women who are
  1. **able to work** (binding)
  2. **not MFI clients** (binding)
  3. have no productive assets or little land
  4. no adult male income earner and/or child labor



# Evaluation Design

- ▶ The roll-out of the program was randomized in collaboration with BRAC.
- ▶ BRAC officials at centre office selected 40 branch offices to target
- ▶ Field officials determine which communities/households will be treated
- ▶ We randomize the roll-out of the program at the branch level:
  - ▶ match branch offices within each sub-district (upazilla)
  - ▶ within each sub-district, selected one branch as treatment and one as control
  - ▶ households in treatment branches receive the program in 2007, others in 2011.
- ▶ STUPs are identified in both treatment and control communities - *they are not informed about the program at baseline*
- ▶ All STUPs in treatment communities are treated.

# Evaluation Design



# Sampling and Survey Design

- ▶ Survey all STUPs + all other poor + a 10% sample from other wealth classes  $\Rightarrow$  *allows to measure spillovers and GE effects*
- ▶ Baseline in 2007, followup in 2009, next followup 2011.
- ▶ 40 branches, 1409 communities, 25068 households (roughly half treatment)
- ▶ Due to large sample size, fieldwork for every survey wave takes about 6 months
- ▶ total cost of the evaluation is about GBP 1.2 million

# The Lives of the Ultra-Poor at Baseline

- ▶ Low human capital: 7% literate, 18.3 average BMI
- ▶ Low PCE: 2/3 of average PCE in middle class, 1/3 of top class
- ▶ Stark wealth inequality: 3% of mean middle class wealth, 0.5% of top class
  - ▶ 45% of STUPs own no assets
  - ▶ average value of asset transfer= 2X initial wealth

# The Lives of the Ultra-Poor at Baseline

	Targeted poor	Other poor	Middle class	Upper class
Number of households	6,817	8,576	7,241	2,428
HH head male	0.58 (0.49)	0.79 (0.41)	0.94 (0.23)	0.95 (0.22)
HH size	3.26 (1.69)	3.70 (1.65)	4.43 (1.66)	5.03 (2.02)
Female respondent is literate	0.07 (0.26)	0.16 (0.37)	0.27 (0.44)	0.52 (0.50)
Female respondent BMI	18.36 (2.24)	18.87 (2.37)	19.33 (2.46)	20.27 (2.90)
Food Security	0.41 (0.49)	0.53 (0.50)	0.81 (0.40)	0.96 (0.19)
Total PCE	3,960.1 (2,267.9)	4,247.1 (2,990.0)	5,563.8 (5,278.6)	11,973.3 (34,484.8)
Wealth	5620.9 (29,931.2)	13,991.2 (69,828.1)	153,359.5 (325,057.5)	853,426.6 (971,623.6)
Livestock value	870.18 (3,207.7)	2,553.3 (6,786.0)	12,879.7 (26,172.3)	31,304.6 (39,186.4)
Durables value	429.1 (509.7)	713.0 (1005.2)	2,263.5 (3,252.6)	7,892.0 (8,900.4)

# The Lives of the Ultra-Poor at Baseline

- ▶ Stark differences in occupational structure:
  - ▶ incidence of wage work (maid, agricultural) decreases with wealth
    - ▶ nobody rich or middle class engages in wage work, but 55% of stups and 36% of other poor do
  - ▶ incidence of self employment (livestock, land) increases with wealth:
    - ▶ 87% of the rich but only 28% of stups are solely engaged in self employment
- ▶ Poor women work longer hours

# The Lives of the Ultra-Poor at Baseline

Female respondent, hours spent in:				
<i>Self-employment</i>	413.4 (580.9)	502.8 (575.4)	700.4 (559.3)	769.5 (512.9)
<i>Wage employment</i>	723.5 (847.8)	435.3 (712.4)	110.9 (398.3)	42.6 (279.1)
<i>All income generating activities</i>	1136.8 (886.2)	938.3 (827.3)	811.3 (643.1)	812.1 (554.3)
Female respondent, total earnings	5001.4 (5,394.1)	4182.9 (6,165.1)	4806.8 ( 11,611.3)	9687.2 (24,279.9)
<b>Occupation at baseline (% of respondents):</b>				
Wage employment only	28.2	14.6	2.5	0.7
Both self-employment and wage labor	26.8	21.9	7.2	2.1
Self-employment only	29.3	44.3	76.2	87.1
Out of the labor force	15.6	19.2	14.4	10.1

# Compliance and Retention

- ▶ compliance: 100% of selected STUPs joined the programme and received training and assets after baseline (88% at least one cow, 9% at least one goat)
- ▶ retention: of those who received a cow, 91% of stups still had it at follow-up



# The effect of the program

- ▶ The program can impact labor supply and occupational choice through two channels:
  1. the asset transfer increases wealth  $I$
  2. the training increases the returns to self-employment  $r$
- ▶ The effect of these depends on whether the individual faced a binding asset constraint at baseline:
  1. for unconstrained individuals, the asset transfer reduces both  $L, S$  and labor force participation, the training increases  $S$  and labor force participation and reduces  $L \Rightarrow$  overall effect on  $S$  is ambiguous,  $L$  falls
  2. for constrained individuals, the asset transfer increases  $S$  and reduces  $L$ , the training (weakly) increases  $S$  and reduces  $L \Rightarrow$  overall  $S$  increases and  $L$  falls

# ATT: specification

- ▶ Estimate:

$$\Delta y_i = \alpha + \lambda T_i + \eta_d + \epsilon_i,$$

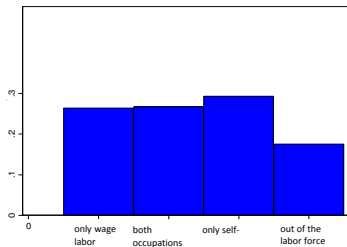
- ▶  $T_i = 1$  in treatment communities and  $\eta_d$  are subdistrict fixed effects
- ▶ The effect of the program is identified by comparing changes in outcomes within the same individual before and after the program in treatment communities to the same changes in control communities within the same subdistrict.
- ▶ Control for all time-varying factors common to individuals in treatment and control communities, and for all time-invariant individual heterogeneity.
- ▶  $\lambda$  identifies the causal effect of the treatment on the treated under the common trend assumption
- ▶ Residuals are clustered at the community level (robust to branch level)

# ATT: Occupational Choice

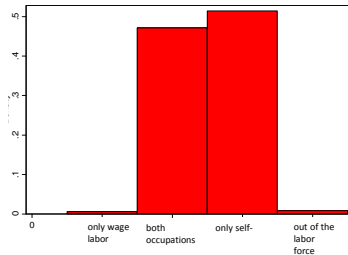
Figure 1: Occupational Choice at Baseline and Followup, Main Female Respondent Targeted Households, by Treatment Status

## TREATMENT COMMUNITIES

Baseline

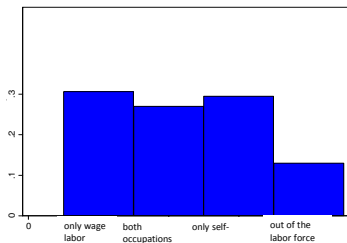


Followup



## CONTROL COMMUNITIES

Baseline



Followup



# ATT: Occupational Choice

- ▶ Figure illustrates striking change in the occupational structure of the ultrapoor in treated communities relative to their counterparts in control communities.
- ▶ At baseline, the distribution across activities was similar in treatment and control communities
- ▶ At followup, all the women in treated communities were in the labor force, and almost all of them were engaged in self-employment, whereas women in control communities experienced no noticeable change relative to baseline.

# ATT: Occupational Choice

**Table 2: Average treatment effects on occupational choice and earnings of targeted women**

	Hours spent in self- employment	Hours spent in wage- employment	Hours worked	Labor force participation	Total earnings
Treatment community	557.19*** (22.590)	-80.34*** (25.81)	476.8*** (32.31)	0.13*** (0.01)	1755.79*** (245.65)
Observations	6817	6817	6817	6817	6817
Adjusted R-squared	0.18	0.03	0.08	0.04	0.04

Difference in difference estimates. \*\*\* (\*\*) (\*) indicate s the hypothesis that the coefficient equal zero can be rejected at the 1% (5%) (10%) level. Standard errors are clustered at the community level. All regressions include subdistrict fixed effects. All variables are measured on an annual basis. Total earnings equals earnings from all income generating activities the woman is involved in.

# ATT: Occupational Choice- Interpretation

- ▶ Results indicate that the effect of the training component and/or the effect of relaxing binding asset constraints prevail over the wealth effect of the asset transfer, as all treated women work more rather than less.
- ▶ The increase in self-employment hours is in line with BRAC's expectations of time needed to tend to the combinations of assets offered by the program.
- ▶ In line with this, next table shows that the ultrapoor retained the assets instead of liquidating them:
  - ▶ the average treated household has more one more cow, .75 more chicken and 2.6 more goats
  - ▶ total livestock value increases by 11,306 TK - which corresponds to an additional 19% increase over and above the value of average asset transferred by the program (9,500TK) - due to offsprings or further purchases.

# ATT: Occupational Choice

**Table 3: Average treatment effect on livestock assets of targeted women**

	Number of cows	Number of poultry	Number of goats	Livestock value
Treatment community	1.22*** (0.02)	0.75*** (0.04)***	2.57*** (0.16)***	11306.49** (230.29)***
Observations	6817	6817	6817	6817
Adjusted R-squared	0.47	0.12	0.08	0.31

Difference in difference estimates. \*\*\* (\*\*) (\*) indicates the hypothesis that the coefficient equal zero can be rejected at the 1% (5%) (10%) level. Standard errors are clustered at the community

# ATT: Consumption

**Table 5. Average treatment effect on the welfare of targeted women's households**

	Food security	PCE food	Price per calorie	PCE non-food	Total PCE
Treatment community	0.15*** (0.03)	150.72*** (57.82)	0.03** (0.01)	231.49*** (61.84)	369.38*** (93.63)
Observations	6817	6295	6294	6500	6295
Adjusted R-squared	0.137	0.027	0.033	0.014	0.021

Difference in difference estimates. \*\*\* (\*\*) (\*) indicate s the hypothesis that the coefficient equal zero can be rejected at the 1% (5%) (10%) level. Standard errors are clustered at the community level. All regressions include subdistrict fixed effects. All variables are measured at the household level. Food security equals one if the household could afford two meals per day most of the time over the previous year, 0 otherwise. Per capita food expenditure is imputed at the yearly level on the basis of reported food expenditure in the last three days. Price per calorie is computed as the ratio of total food expenditure over total calories purchased. Per capita non-food expenditure includes all expenditures other than food over the previous year.



# Cost and Benefit (Back of the Envelope)

- ▶ Program costs TK 20,700 per household
- ▶ Yearly income of female respondent increases by TK 1,755  $\approx 9\%$  of initial cost — probably an underestimate of the long-run effects
- ▶ Comparing this to a cash transfer requires assumption on how the treated would have spent the cash
- ▶ One option that is available to all, self-control issues aside, is to deposit the cash transfer in a savings account. At the going interest rates (6%), this would have yielded 1242 TKs per year, significantly different from TK 1,755 at the 3% level.
  - ▶ return might have been higher if treated individuals would have been able to invest the cash transfer into an enterprise for which they were better suited
  - ▶ return might have been lower if the cash transfer were consumed immediately either by the recipient or members of their social network

# Heterogeneous effects: predictions

- ▶ Effect of the program will depend on whether the individuals were asset constrained or not, which is reflected in their baseline occupational choice
  - ▶ unconstrained individuals are either out of the labor force or only engaged in  $S$  (if  $r_i > w$ ) or only  $L$  (if  $r_i < w$ )
  - ▶ individuals who engage in both occupations must be constrained
- ▶ Effect of  $r$  is the same for everyone  $\rightarrow$  increase self-employment hours and participation, reduce labor hours
- ▶ Effect of  $K$  depends on whether individual was constrained or not
  - ▶ If unconstrained  $\rightarrow$  decrease  $S$  and participation,  $L$  unchanged
  - ▶ If constrained  $\rightarrow$  increase  $S$  and reduce  $L$

# Findings: heterogeneous effects

**Table 4: Treatment effects on occupational choice and earnings by baseline occupation of targeted women**

	Hours spent in self-employment	Hours spent in wage- employment	Labor force participation	Total income
Treatment effect on those who were:				
in Wage-employment only	660.64*** (29.97)	-228.23*** (52.18)	0.04*** (0.01)	987.11*** (404.76)
in Both occupations	518.81*** (32.45)	-151.75*** (47.85)	0.03*** (0.01)	1528.91*** (475.31)
in Self-employment	470.06*** (43.79)	-39.14 (24.80)	0.10*** (0.01)	2077.49*** (351.13)
Out of the labor force	618.19*** (34.88)	-97.67** (38.43)	0.24*** (0.03)	1875.65*** (413.65)
Observations	6817	6817	6817	6817
Adjusted R-squared	0.30	0.20	0.75	0.06

Difference in difference estimates. \*\*\* (\*\*) (\*) indicate s the hypothesis that the coefficient equal zero can be rejected at the 1% (5%) (10%) level. Standard errors are clustered at the community level. All regressions include subdistrict fixed effects. All variables are measured on an annual basis. Total earnings equals earnings from all income generating activities the woman is involved in.

## Findings: heterogeneous effects

- ▶ individuals in all 4 groups spend significantly more hours in self-employment
- ▶ that self-employment hours increases for women who did not face asset constraints at baseline indicate that the training component of the program successfully increased the returns to self-employment.
- ▶ the program leads to an increase in total earnings for individuals in all groups
  - ▶ this is significantly larger for individuals who were either out of the labor force or solely engaged in self-employment at baseline thus the program is more effective at increasing earnings for the least poor among these very poor individuals.

# GE effects: Predictions

- ▶ Program transforms occupational choice of targeted women, this can have general equilibrium effects on:
  - ▶ unskilled wages (through drop in  $L$ )
  - ▶ product prices (through increase in  $S$ )
  - ▶ asset prices (through increase in availability)

# GE effects: Findings

- ▶ Using the same D-i-D approach *at the village level*, we find that in treated villages
  - ▶ wage increases by 10%
  - ▶ goat prices fall by 7%, cow and poultry prices are unaffected  
[consistent with the fact that size of the asset transfer relative to baseline stock is 7.5% for cows, 1% for poultry and 32% for goats]
  - ▶ milk and egg prices fall by 2%- not precisely estimated

# General Equilibrium Effects

**Table 6: General equilibrium effects on wages and prices at the community level**

	Log (wages)		Asset prices			Product prices	
	Women	Men	Cows	Poultry	Goats	Milk	Eggs
Treatment community	0.10*** (0.03)	0.01 (0.02)	0.10 (0.07)	0.04 (0.09)	-0.09*** (0.02)	-0.02 (0.05)	-0.02 (0.03)
Observations	1288	1380	1402	1291	1406	1224	1238
Adjusted R-squared	0.08	0.05	0.05	0.05	0.16	0.08	0.10

Difference in difference estimates. \*\*\* (\*\*) (\*) indicates the hypothesis that the coefficient equal zero can be rejected at the 1% (5%) (10%) level. Standard errors are clustered at the community level. All regressions include subdistrict fixed effects. All variables are computed as community level averages. The number of observations differs across columns because of missing values.

# Spillovers on other poor

- ▶ we can use the same theoretical framework to test the effect on other poor.
- ▶ Higher  $w$  will increase labor force participation and labor hours.
- ▶ Lower  $p_k$  will increase the net return to self-employment, which will weakly increase labor force participation and self-employment hours.
- ▶ Given that the wages for men are not affected by the program, we expect there to be no impact on men's occupational choice.



# Average effect of the program on other poor (women)

**Table 7: Average effects on occupational choice and earnings of other poor women**

	Hours spent in self- employment	Hours spent in wage- employment	Labor force participation	Total earnings
Treatment community	30.32 (20.99)	51.36*** (18.37)	0.04*** (0.01)	478.68** (204.36)
Observations	8576	8576	8576	8576
Adjusted R-squared	0.03	0.03	0.03	0.03

Difference in difference estimates. \*\*\* (\*\*) (\*) indicate s the hypothesis that the coefficient equal zero can be rejected at the 1% (5%) (10%) level. Standard errors are clustered at the community level. All regressions include subdistrict fixed effects. All variables are measured on an annual basis. Total earnings equals earnings from all income generating activities the woman is involved in.

# Average effect of the program on other poor (men)

**Table A3: Average effects on occupational choice and earnings of other poor men**

	Hours spent in self- employment	Hours spent in wage- employment	Labor force participation	Total income
Treatment community	-33.98 (27.86)	-10.48 (28.81)	-0.02 (0.013)	-431.862 (437.06)
Observations	8576	8576	8576	8576
Adjusted R-squared	0.02	0.04	0.04	0.06

Difference in difference estimates. \*\*\* (\*\*) (\*) indicate s the hypothesis that the coefficient equal zero can be rejected at the 1% (5%) (10%) level. Standard errors are clustered at the community level. All regressions include subdistrict fixed effects. All variables are measured on an annual basis. Total earnings equals earnings from all income generating activities the man is involved in.

# Average effect of the program on other poor women

- ▶ Consistent with the increase in wage, the average non-treated poor woman:
  - ▶ devotes 51 more hours to wage employment, a 12% increase relative to baseline
  - ▶ is 4 percentage points more likely to work (relative to 81 pp at baseline)
  - ▶ her total earnings increase by TK479, a 11% increase relative to baseline.
- ▶ The program thus benefits unskilled workers other than the targeted women

# Conclusion

- ▶ Poorest capable of running small businesses
- ▶ There is a large shift of hours worked towards self-employment (running livestock business)
- ▶ There is a large increase in hours worked
- ▶ Shift towards self-employment and increase in hours worked associated with big increase in income
- ▶ Program appears to be highly cost-effective

# Conclusion

- ▶ Removal of labor from landless labor and domestic servant markets associated with an increase in wages
- ▶ Ultra-poor leapfrog other poor to become more like middle class in these village in terms of occupational choice and welfare
- ▶ Program has had transformative impact on their lives: treated ultrapoor households have started to invest in other, non-program productive assets - 2 percentage points more likely to own land (compared to 6% at baseline) and 8 percentage points more likely to rent in land (compared to 6% at baseline).
- ▶ The fact that this is happening just two years after the treatment suggests that the treated ultrapoor have taken a significant step up the ladder out of poverty.

## Other income generating activities

**Table 8: Average treatment effects on other income generating activities of targeted women**

	=1 if owns land	=1 if rents land	Number of shops
Treatment community	0.02*** (0.006)	0.08*** (0.01)	0.01* (0.005)
Observations	6817	6817	6817
Adjusted R-squared	0.01	0.04	0.00

Difference in difference estimates. \*\*\* (\*\*) (\*) indicate s the hypothesis that the coefficient equal zero can be rejected at the 1% (5%) (10%) level. Standard errors are clustered at the community level. All regressions include subdistrict fixed effects.