Can Entrepreneurship Programs Transform the Economic Lives of the Poor?

Oriana Bandiera (LSE)
Robin Burgess (LSE)
Selim Gulesci (LSE)
Imran Rasul (UCL)
Munshi Sulaiman (BRAC/LSE)

IGC Growth Week, September 2010

The issues

- Development requires increases in productivity
  - for a given occupational structure/set of activities
  - through changes in the composition of economic activity
- Poorest typically engaged in low productivity occupations
- Limited understanding of if/how policies can affect occupational choice
  - key topic in development theory
  - limited empirical evidence

The questions

- Lack of skills and assets make the poorest unresponsive to a large array of existing programs, e.g. microfinance and technology transfers
- We evaluate an innovative program that tackles both simultaneously
- Core questions:
  - can entrepreneurship be taught to the very poorest people?
  - can it transform the lives of the poor in the long run?
- Methodology: can researchers and practitioners collaborate successfully?

Plan of the talk

1. BRAC's ultra poor program in Bangladesh
2. Evaluation Strategy
3. The lives of the ultrapoor at baseline
4. Treatment on the treated
5. Spillovers

BRAC's Ultra Poor Program

- BRAC, largest and fastest growing NGO in the world, 117.067 employees (Jan 2009)
- STUP (Specially Targeted Ultra Poor), three key components:
  - asset transfer (livestock), average value 9,000TK ($130)
  - enterprise training
  - lessons in micro-finance + invitation to join after 18-24m
- Complementary components:
  - subsistence allowance (Tk 15 per day) 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

Identifying the "Ultra-Poor"

- BRAC Centre identifies the areas
- Within these, BRAC branch offices identify the communities
- Communities engage in participatory wealth ranking
- Everyone in the lowest wealth rank (5) is included in a "primary selection survey" and then subject to further examination to verify exclusion/inclusion criteria

Identifying the "Ultra Poor"

- Exclusion criteria (all binding)
  - Household is borrowing from a micro-credit providing NGO
  - Household is recipient of government development program
  - There is no adult woman in the household who is physically able

Identifying the "Ultra Poor"

- Inclusion criteria (need to satisfy at least 3)
  - Total land owned including homestead is not more than 10 decimals
  - No adult male income earner in the household
  - Adult women in the household work outside the homestead
  - School age children work
  - Household has no productive assets

Evaluation Strategy: Description

- The roll-out of the program was randomized in collaboration with BRAC.
- Randomization at the branch level: half treated in 07, half in 11
- STUPs are identified in both treatment and control communities
- All STUPs in treated communities are treated.
- Survey all STUPs + a 10% sample from other wealth classes
- Baseline in 2007, followup in 2009, next followup 2011.
- 40 branches, 1409 communities, 25068 households

Evaluation Strategy: Elements of Collaboration

- Evaluation and survey designed jointly with BRAC's own research team to harness a set of different skills
- Evaluation does not interfere with program implementation
- Rather, it exploits variation due to existing logistical constraints
  - necessarily gradual roll-out
- Introduce randomization in a "policy-neutral" way

Evaluation Strategy: Main Features

- The effect of the program is evaluated by comparing treated and non-treated STUPs before and after the program
- Randomization ensures that treatment is not correlated with characteristics that determine outcomes
- Data on non-treated STUPs allows to remove the effect of factors that change at the same time as the program (e.g. food crisis)

Survey: Main Features

- Detailed information on income generating activities and assets allow to shed light on the transformation
- Timing allows to evaluate medium and long run effects
  - average 800 days between baseline and followup
  - intensive personalized support ends after 18m
  - STUPs can sell the assets after that
- Surveying non-STUPs in both treated and control communities allows the evaluation of spillover effects

Evaluation Strategy: Main Features

- Random program placement removes endogenous placement bias
- Using STUPs in non-treated communities as controls removes potential spillover bias
- Treating all STUPs within a community ensures no experimenter (Hawthorne) effects
- No attrition or compliance issues: all selected STUPs participated in the program

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 intial wealth

Table 1: Baseline Summary Statistics

Means, standard deviations in parenthesis

		STUPs	Other poor	Middle class	Upper class
Number of households		6,819	8,628	5,390	4,231
HH Head Male		.58	.78	.94	.95
		(.49)	(.41)	(.24)	(.22)
HH Size		3.2	3.7	4.4	5.1
		(1.7)	(1.6)	(1.7)	(2.0)
Female respondent is literate		.07	.16	.27	.52
		(.26)	(.37)	(.44)	(.50)
Female respondent BMI		18.3	18.9	19.3	20.3
		(2.2)	2.4)	2.5)	(2.9)
Total Pce		3961.1	4247.1	5563.3	11973.2
		(2268.7)	(2989.9)	(5277.8)	(34484.8)
Wealth		5619.8	14009	153318,7	853426.6
		(29926.8)	(69843.4)	(325021.9)	(971623.6)
	Livestock value	869.9	2553.1	12876.8	31304.6
		(3207.2)	(6785.7)	(26169.3)	(29186.4)
	Durables value	375.8	566.8	1620.3	5967.5
		(406.4)	(763.2)	(2545.7)	(7908.3)
Savings		142.3	389.9	1617.6	9297.1
		(804.4)	(1291.4)	(10562.1)	(31883.9)

The Lives of the Ultra-Poor at Baseline

- Stark differences in occupational structure for both men and women:
  - incidence of wage work (maid, agricultural) decreases with wealth
  - incidence of self employment (livestock, land) increases with wealth
- Poor women work more hours, no difference for men
- Men devote more time to income generating activities (ratio=.4 and falling with wealth)

Table 1: Baseline Summary Statistics

Means, standard deviations in parenthesis

	STUPs	Other poor	Middle class	Upper class
Female respondent, hours spent in:				
Self-employment	413.4	502.8	700.4	769.5
	(580.9)	(575.4)	(559.3)	(512.9)
Wage employment	723.5	435.3	110.9	42.6
	(847.8)	(712.4)	(398.3)	(279.1)
All income generating activities	1136.8	938.3	811.3	812.1
	(886.2)	(827.3)	(643.1)	(554.3)
Male head, hours spent in:				
Self-employment	572.8	750.8	1252.9	1556.1
	(919.9)	(996.4)	(1183.8)	(1191.3)
Wage employment	1074.6	1060.4	638.1	254.6
	(1012.5)	(1018.1)	(932.4	(695.4)
All income generating activities	1651.9	1813.1	1894.5	1816.6
	(1073.3)	(1083.7)	(1169.3)	(1202.9)

Compliance and Retention

- two separate issues- after the intensive part of the program (18m), STUPs were allowed to sell their assets
- compliance: 100% all selected STUPs joined
- retention:
  - 96% stups in the followup have at least a cow/goat (up from 46% in baseline).
  - 91% stups in the followup have at least one cow (baseline figure 6%).

Analysis: two steps.

1. "Treatment on the treated": effect of the program on the intended beneficiaries: the treated STUPs

2. "Spillovers": effect of the program on other households in the community, through, e.g. change in prices

Treatment on the Treated

- Estimate:

$$y_{it} = \alpha + \beta T_i + \delta R_t + \lambda T_i R_t + \gamma X_{it} + \epsilon_{it},$$

- The parameter of interest is λ, the difference in difference between treatment and control before and after the program.
- λ 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)
- Table A1 shows that STUPs as well as other households in treated and control communities had similar characteristics at baseline.

Treatment on the Treated: Occupational Structure

- STUP women more than double the time to self-employment (husbandry and land cultivation) - close the gap with top classes
- They also reduce time devoted to wage employment (ag labor and maid services)
- The increase in self-employment (550 hours) is much larger than the drop in wage employment (100 hours), overall worked hours increase

  $\longrightarrow$ overall labor supply increase (leisure consumption decrease)

  $\longrightarrow$ labor income increase

Table 2: Business activities of the main female respondent , STUPs households

	hours spent in self-employment	income from self-employment	hours spent in wage work	income from wage work	total hours worked	total income
Treat	-3.859	-195.938	-96.135	-358.235	-99.993	-554.173
	(18.288)	(103.479)*	(26.715)***	(291.237)	(27.629)***	(305.619)*
Followup	98.307	912.892	-124.783	1,054.305	-26.476	1,967.197
	(15.791)***	(111.790)***	(21.081)***	(249.881)***	(24.223)	(269.467)***
TreatXfollowup	***558.370***	***2,414.623***	***-102.107***	***-495.754***	***456.263***	***1,918.868***
	(23.460)***	***(193.083)******	***(27.142)******	***(337.151)***	***(33.356)******	***(381.854)******
Constant	314.381	48.119	1,572.222	15,372.352	1,886.602	15,420.471
	(46.230)***	(314.464)	(59.806)***	(720.118)***	(61.542)***	(753.954)***
Observations	13574	13574	13574	13574	13574	13574
R-squared	0.20	0.07	0.17	0.10	0.19	0.12

Notes: OLS estimates, standard errors clustered at the community level in parenthesis.
All regressions include the following controls: age of the respondent, literacy and numeracy of the respondent, gender of the household head, household size and religion.

Treatment on the Treated: Occupational Structure

- All other HH members increase hours devoted to self-employment activities
  - effect strongest for male head (if present)- a 50% increase from baseline
  - reduction in wage hours not precisely estimated

Table 2a: Business activities of other household members , STUPs households

	male head (if present)		adult males		adult females		boys		girls	
	hours spent in self-employment	hours spent in wage work	hours spent in self-employment	hours spent in wage work	hours spent in self-employment	hours spent in wage work	hours spent in self-employment	hours spent in wage work	hours spent in self-employment	hours spent in wage work
Treat	-64.856*	-0.723	-51.018	40.958	-9.505	-14.117	-16.43	-34.05	8.438	-16.46
	(35.941)	(41.412)	(29.902)*	(36.072)	(5.237)*	(7.930)*	(13.05)	(25.36)	(10.10)	(33.02)
Followup	22.311	-196.544***	35.803	-242.012	12.261	-14.259	59.52	-130.5	27.10	-107.2
	(31.498)	(37.635)	(24.682)	(25.336)***	(4.218)***	(6.606)**	(16.81)***	(23.04)***	(9.953)***	(28.23)***
TreatXfollowup	**245.172*** **	**-65.865**	**255.673**	**-33.880**	**139.434**	**-5.906**	**188.0**	**39.66**	**159.4**	**26.47**
	(40.580)	**(47.149)**	**(31.238)*** **	**(33.978)**	**(8.291)*** **	**(8.355)**	**(23.70)*** **	**(27.68)**	**(16.11)*** **	**(33.79)**
Constant	406.546***	1446.603***	253.327	1,296.469	21.134	158.632	-194.7	-249.7	-76.12	-229.2
	(93.076)	(111.471)	(66.780)***	(86.207)***	(13.178)	(20.782)***	(40.31)***	(63.79)***	(30.09)**	(52.06)***
Observations	7862	7862	10634	10634	16460	16460	5,830	5,830	5,185	5,185
R-squared	0.02	0.05	0.05	0.06	0.15	0.03	0.104	0.097	0.147	0.033

Notes: OLS estimates, standard errors clustered at the community level in parenthesis.
All regressions include the following controls: age of the respondent, literacy and numeracy of the respondent, gender of the household head,

Treatment on the Treated: Productive Assets

- Increase in asset holding mirrors occupational changes
  - value of livestock owned increases X14 times
  - complementary assets increase as well: animal sheds and shops
- Increase in size of land cultivated, both through ownership and rental
  - evidence that STUPs engage in other self-employment activities, not directly related to the program

Tabe 3 Productive Assets, STUP households

	number of cows	number of poultry	number of goats	livestock value	number of sheds	number of shops	=1 if owns land	size of cultivated land	=1 if rents in land
Treat	0.009	-0.025	-0.102	-42.294	0.017	-0.001	-0.007	-0.101	-0.016
	(0.010)	(0.018)	(0.111)	(99.193)	(0.013)	(0.002)	(0.007)	(0.183)	(0.007)**
Followup	0.064	0.014	0.222	586.998	0.103	0.001	0.005	-0.088	0.038
	(0.010)***	(0.016)	(0.098)**	(105.702)***	(0.012)***	(0.002)	(0.004)	(0.119)	(0.007)***
TreatXfollowup	**1.211**	**0.733**	**2.432**	**11,145.310**	**0.546**	**0.010**	**0.015**	**0.309**	**0.079**
	(0.021)* **	**(0.040)*** **	**(0.174)*** **	**(238.400)*** **	**(0.021)*** **	**(0.005)* **	**(0.006)** **	**(0.158)** **	**(0.010)*** **
Constant	-0.012	0.132	-0.232	-879.186	0.029	-0.013	0.006	-1.304	-0.009
	(0.040)	(0.079)*	(0.306)	(507.167)*	(0.036)	(0.005)**	(0.022)	(0.618)**	(0.019)
Observations	13574	13574	13574	13574	13574	13574	13574	13574	13574
R-squared	0.56	0.11	0.09	0.40	0.29	0.00	0.01	0.01	0.06

Notes: OLS estimates, standard errors clustered at the community level in parenthesis.
All regressions include the following controls: age of the respondent, literacy and numeracy of the respondent, gender of the household head,

Treatment on the Treated: Financial Participation

- Another key target of the program
- Savings increase four-fold
- The likelihood of borrowing and lending increase by 13% and 5%
- Conditional on borrowing/lending, average loan size increases by 37% (150%)

Table 4: Financial assets of the female respondent, STUPs households

	log(savings)	=1 if borrows	log(loan value)	=1 if lends	log (lending value)
Treat	-0.063	-0.055	-0.161	-0.004	-0.384
	(0.104)	(0.013)***	(0.088)*	(0.003)	(0.287)
Followup	0.999	0.157	-0.013	0.023	0.410
	(0.094)***	(0.013)***	(0.084)	(0.004)***	(0.294)
TreatXfollowup	**4.205**	**0.137**	**0.327**	**0.045**	**0.912**
	(0.120)* **	**(0.019)*** **	**(0.105)*** **	**(0.007)*** **	**(0.365)** **
Constant	1.751	0.195	6.623	0.052	6.826
	(0.170)***	(0.031)***	(0.178)***	(0.011)***	(0.614)***
Observations	13574	13574	4176	13574	510
R-squared	0.53	0.13	0.06	0.03	0.08

Notes: OLS estimates, standard errors clustered at the community level in parenthesis.
All regressions include the following controls: age of the respondent, literacy and numeracy of the respondent, gender of the household head, household size and religion.Savings include total amounts saved with formal/informal institutions by the main female respondent. Borrows/loan value refers to the outstanding loans, either in cash or in kind, from any sources taken by the female respondent and her spouse. Lending refers to outstanding loans, in cash or in kind, given out by the respondent and her

Treatment on the Treated: Welfare

- Change in occupation $\rightarrow$ increase income $\rightarrow$ increase expenditures
- Food, non-food and total PCE increase by 7%, 21% and 10%, respectively
- Food security increases by 1/3

Table 5: Welfare, STUPs households

	food security	PCE food	PCE non food	PCE total	log (wealth)
Treat	0.081	127.121	-6.082	126.304	-0.145
	(0.024)***	(40.991)***	(49.878)	(71.170)*	(0.056)***
Followup	0.204	-519.902	171.409	-337.048	0.384
	(0.021)***	(40.008)***	(49.327)***	(68.705)***	(0.041)***
TreatXfollowup	**0.162**	**189.053**	**212.777**	**390.037**	**2.300**
	(0.029)* **	**(58.111)*** **	**(63.029)*** **	**(90.895)*** **	**(0.056)*** **
Constant	0.244	3,752.921	883.977	4,619.615	6.067
	(0.040)***	(90.375)***	(113.984)***	(154.150)***	(0.128)***
Observations	13574	12611	12917	12603	13120
R-squared	0.14	0.06	0.01	0.02	0.44

Notes: OLS estimates, standard errors clustered at the community level in parenthesis.
All regressions include the following controls: age of the respondent, literacy and numeracy of the respondent, gender of the household head, household size and religion. Food security is a self-reported measure of whether the household could afford at least two meals a day regularly in the past one year. Wealth includes total value of land, other productive assets, household durables and savings.

Spillovers: Labor Markets

- In both maid and agricultural markets, the labor supply of non-STUP *women* increases, but not enough to compensate for the supply drop of STUPs
- In both markets, *female wages* increase, both for STUPs and non-STUPs.
  - maid wages increase by 35% and 25%, respectively
  - ag wages increase by 11% and 7% , respectively
- In contrast, the average labor supply of STUP men decreases, but the wage remains constant
- Two implications:
  - labor markets are segmented by gender
  - elasticity might differ– further analysis needed.

Spillovers: Labor Markets

- Given its large effects on the bottom 10-15% of the population, the program is likely to have spillover effects on other households
- Labor market spillovers are the leading candidate, as the program exogenously reduces the supply of casual labor
- Examine the three main labor markets: maid services and casual agricultural labor, separately by gender
- Analyse changes in wages and in labor supply, both on the intensive and extensive margin

Table 6: Spillovers, Labor Markets

	maid labor market		
	wage	total hours	participation
treatXfollowup -all other classes	**6.715*** **	39.790***	0.008
	(1.779)	(9.610)	(0.006)
treatXfollowup -additional stup effect	**2.561** **	-174.441***	-0.021***
	(1.224)	(12.228)	(0.008)
R2	**.0571813**	.1482679	.0429134
N	**2651**	49922	49922

Table 6: Spillovers, Labor Markets

	agricultural daily labor market- WOMEN		
	wage	total hours	participation
treatXfollowup -all other classes	**2.611****	4.919	-0.008
	(1.210)	(9.129)	(0.007)
treatXfollowup -additional stup effect	**1.490***	-44.093***	0.003
	(0.794)	(8.990)	(0.009)
R2	**.1474249**	.099323	.1010778
N	**7381**	49922	49922

Table 6: Spillovers, Labor Markets

	agricultural daily labor market -MEN		
	wage	total hours	participation
treatXfollowup -all other classes	**-0.984**	7.568	0.012
	(0.845)	(18.183)	(0.009)
treatXfollowup -additional stup effect	**0.963**	-61.674***	0.001
	(0.690)	(15.826)	(0.009)
R2	**.2728294**	.1121334	.1816363
N	**15808**	50136	50136

Spillovers: Occupational Choice and Welfare

- Other poor women devote more time to both self-and wage employment, total wage income increases
- Self- employment hours devoted to animal husbandry but livestock value constant $\rightarrow$ increase in livestock rental
- Mostly no spillovers in PCE, *except:*
  - food expenditure of other poor households where at least one female was engaged in wage employment at baseline increases by 5% (similar magnitude to STUPs)
  - consistent with increase in wage and labor income.

Table 6: Spillovers on occupational choice, by social class

	female respondent			
	hours spent in self-employment	Self-emplyment income	hours spent in wage work	wage income
Other poor				
TreatXfollowup	44.484**	35.769	53.557***	605.714***
	(21.213)	(173.420)	(19.180)	(151.096)
R-squared	.0141911	.0258725	.1070208	.0844934
Observations	17062	17062	17062	17062
Middle class				
TreatXfollowup	-9.222	557.131	2.536	137.715*
	(22.089)	(417.161)	(10.419)	(81.918)
R-squared	.0106082	.0342796	.0556594	.0289421
Observations	14433	14433	14433	14433
Rich				
TreatXfollowup	-18.092	3061.773**	-5.292	250.908
	(30.672)	(1431.415)	(8.500)	(220.915)
R-squared	0.02	0.02	0.02	0.02
Observations	4835	4835	4835	4835

Notes: OLS estimates, standard errors clustered at the community level in parenthesis.
All regressions include the following controls: age of the respondent, literacy and numeracy of

Table 6: Spillovers on occupational choice, by social class

	male head			
	hours spent in self-employment	Self-emplyment income	hours spent in wage work	wage income
Other poor				
TreatXfollowup	-5.784	-59.473	-4.275	136.374
	(33.838)	(469.815)	(38.187)	(466.359)
R-squared	.0113283	.018781	.0336287	.0253801
Observations	13324	13324	13324	13324
Middle class				
TreatXfollowup	-49.489	1306.051	-37.400	-445.897
	(40.728)	(1046.556)	(29.250)	(443.387)
R-squared	.0159868	.0192935	.0335967	.0203648
Observations	13511	13511	13511	13511
Rich				
TreatXfollowup	-109.088	-594.912	-12.625	-546.798
	(69.015)	(4754.748)	(31.581)	(932.658)
R-squared	0.05	0.02	0.03	0.04
Observations	4565	4565	4565	4565

Notes: OLS estimates, standard errors clustered at the community level in parenthesis.

Table 7: Spillovers on welfare, by social class

	log(pce food)	log (pce non food)	log(pce)
other poor			
TreatXfollowup	-0.000	0.028	0.001
	(0.016)	(0.032)	(0.017)
R-squared	.1361376	.0138945	.0447618
Observations	15730	16060	15720
other poor by occupation			
TreatXfollowupXnon wage worker	-.019	.045	.001
	(.018)	(.035)	(.019)
TreatXfollowupXwage worker	***.048*****	***-.019***	***.016***
	(.024)	***(.045)***	***(.026)***
R-squared	.1345	.0185	.0469
Observations	15730	16060	15720
middle class			
TreatXfollowup	0.010	0.004	0.011
	(0.017)	(0.031)	(0.019)
R-squared	.145122	.0373988	.0453812
Observations	12645	12846	12624
rich			
TreatXfollowup	0.040	0.122**	0.083**
	(0.028)	(0.056)	(0.037)
R-squared	.1580812	.0539588	.077405
Observations	4258	4291	4246

Notes: OLS estimates, standard errors clustered at the community level in parenthesis All regressions include the following controls: age of the respondent, literacy and numeracy of the respondent, gender of the household head, household size and religion. Food security is a self-reported measure of whether the household could afford at least two meals a day regularly in the past one year. Wealth includes total value of land, other productive

Conclusions: Effects on the Treated

- We show that even extremely poor people with low skills can successfully operate small businesses
- Program success relies on the choice of "appropriate" projects- in this case livestock rearing, which is a common activity undertaken by richer people in the same communities
- However, we cannot disentangle the effect of different components (training vs capital vs weekly visits for 18m, and also legal support, committees, health visits)
- Further research will explore:
  - effect on human capital accumulation, especially of children (could be positive or negative -more work less schooling?)
  - long run effect– is this a permanent shift?

Conclusions: GE effect

- The program is large enough to generate spillovers on other poor households by changing the equilibrium wage in labor markets
- This has to be taken into account when comparing costs and benefits
- Macro impact: 800K poorest hh reached by 2011
- We expect GE effects at the economy level
- Potential to increase average productivity from the very bottom

Conclusions: can this success be replicated elsewhere?

- Local NGOs solving local problems
- Currently being piloted by other NGOs in 7 countries across the world:
  - Asia: India WB, AP- Pakistan
  - Latin America: Haiti, Honduras, Peru
  - Africa: Ethiopia
- and also by the government of Yemen
- Power of an idea: international scale up