

Changing women's investments and aspirations through social interactions:

Evidence from a randomized transfer program in a low-income country

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Motivation

- Sustainability of asset transfer programs in low-income countries
- Why do the poor not save/accumulate?
- Relationship between poverty and aspirations
- Role of social interactions and spillovers

Motivation from the field

“Before the program, I just thought about working in order to eat from day to day. Now I think about working in order to move forward through my business. Through experiences, one learns and opens up towards the future. By talking to others, one understands and learns.”

Beneficiary of the productive investment package

Research Questions

- Did program impacts augment through social spillover effects?
 - ~ role of female leaders
- Did social interactions affect aspirations and attitudes?

Identification through randomization

- Random treatment and control communities
 - Within treatment communities, random assignment of 3 different interventions to beneficiaries
 - Random assignment of same 3 interventions to female leaders
- => Are impacts different for households who live in the proximity of leaders with certain types of interventions?

Pre-view of results

- Proximity to female leaders who randomly got the largest intervention increases program impacts in human capital and income diversification of the other beneficiaries
- Proximity to female leaders with the same intervention has an impact on beneficiaries' attitudes and aspirations

Outline

- Program description and design
- Data
- Method
- Main results: Social spillovers on
 - Human capital investments
 - Economic activities
 - Aspirations
- Underlying mechanisms
 - Effort and motivation
 - Social interactions
 - Alternative explanation: Economic spillovers
- Conclusions, implications, and next steps

Program Description and Design

- *“Atencion of Crisis”*
- 6 municipalities in rural Nicaragua with high levels of extreme poverty and frequent droughts
- Objectives:
 - Short-run safety net after a drought shock
 - Facilitate long-term risk management through income diversification
- Randomization through lotteries
 - 56 Treatment and 50 Control communities
 - 3 Intervention packages
 - 1000 hh: CCT
 - 1000 hh: CCT + vocational training
 - 1000 hh: CCT + productive investment grant
- Eligibility based on proxy means (90% of hh)
- Women primary beneficiaries of program

Program design and social dynamics

- Wide program coverage: 90% of households in treatment communities benefited
- Many joint program activities:
 - workshops, capacity training, payment days, ...
- New female leadership positions created by program: *Promotoras*
 - self-selected coordinators, responsible for information sharing, motivating and monitoring small group of beneficiaries (aprox. 10)
- 3 packages of various sizes and at various stages of implementation
 - => heterogeneity

Data

- Baseline and follow-up household level survey on aprox. 4400 households (with tracking)
 - Census in treatment communities; sample in control)
- At follow-up
 - additional instrument for primary caregivers of young children (0-8): on ECD and attitudes/mental health
 - Community survey
- 2 rounds of qualitative data

Method

- Impact estimates based on differences between treatment and control and the 3 different interventions
 - Randomization worked
 - Double-difference as additional robustness check
 - Near 100% take-up of the program
 - No contamination
 - Very low attrition: 1.3% of households

Average program impacts (all beneficiaries)

- Increase in human capital investment (education, nutrition, ECD)
- Increase in income, in particular increases in non-agricultural self-employment for beneficiaries of productive investment package
- Increase in perceptions of upward mobility, more so for beneficiaries of the productive investment package

Different ex-post outcomes for female leaders with the productive packages

- No ex-ante differences across leaders with different intervention
- Simple ex-post differences across leaders with different intervention show that
 - Households with female leaders that received the productive investment package have
 - higher income from non-agricultural self-employment (commercial activities)
 - stronger perceptions of upward mobility, than those with basic package
 - Households with female leaders that received the vocational training package have higher expectations about the future, than those with basic package
 - No differences in human capital outcomes of households with female leaders across 3 different packages

Do social dynamics affect program outcomes?

- Female leaders (*promotoras* + other women with leadership positions in the assembly) were randomly assigned to one of the three intervention packages
- We know which beneficiaries live in their proximity, as they were invited to the same registration assembly
- Beneficiaries and leaders with the productive investment package had received largest benefit
- Investigate whether program impacts depend on % female leaders of one's registration assembly (i.e. proximity) who obtained the productive investment package (mean 31%)

=> Identification based on random assignment of packages to leaders

Do social dynamics affect program outcomes?

- => large social spillover effects on
- human capital investment
 - Income and income diversification

All beneficiaries

Table 8a: Human capital investments for all beneficiaries : Spill-overs

	Education		Consumption	
	Assisting to school 7-18 year olds	Number of days absent from school (7-25 year olds)	Log (food consumption per capita)	Log(total consumption per capita)
Intent-to-treat *share of female leaders with productive investment package	0.0621* (0.032)	-0.679*** (0.22)	0.154* (0.090)	0.231** (0.10)
Intent-to-treat	0.0508*** (0.018)	-0.394** (0.18)	0.276*** (0.056)	0.219*** (0.066)
Constant	0.759*** (0.013)	1.648*** (0.14)	8.114*** (0.037)	8.525*** (0.043)
Observations	5168	5212	3286	3282
R-squared	0.01	0.01	0.08	0.06

Robust standard errors in parentheses, corrected for clustering at the community level. *** p<0.01, ** p<0.05, * p<0.1

Individual data for education, household data for consumption variables. Excluding households with female leaders. Intent-to-treat estimator.

Table 8a: Human capital investments for all beneficiaries : Spill-overs (cont.)

	Nutrition			
	Number of days in the last week that child drank/ate:			
	Fruit juice	Vegetables	Cheese	Meat
Intent-to-treat	0.792*	0.699	1.060**	0.336*
*share of female leaders with productive investment package	(0.41)	(0.49)	(0.51)	(0.19)
Intent-to-treat	1.038***	0.616*	0.913***	0.779***
	(0.22)	(0.31)	(0.24)	(0.100)
Constant	2.571***	1.530***	1.910***	0.581***
	(0.13)	(0.16)	(0.15)	(0.058)
Observations	3071	3074	3074	3073
R-squared	0.05	0.03	0.05	0.08

Robust standard errors in parentheses, corrected for clustering at the community level. *** p<0.01, ** p<0.05, * p<0.1

Data for children 0-8.5 years old. Excluding households with female leaders. Intent-to-treat estimator.

Table 8b: Economic activity outcomes for all beneficiaries : Spill-overs

	Total income (per capita)	Income from commercial activities (per capita)	Income from non- agricultural self- employment (per capita)	Income from agricultural wages (per capita)
Intent-to-treat	1172*	84.85	102.4	-78.25
*share of female leaders with productive investment package	(665)	(69.8)	(83.8)	(93.9)
Intent-to-treat	243.4	23.74	40.46	-1.756
	(364)	(27.4)	(40.3)	(72.7)
Constant	3237***	72.24***	158.1***	457.6***
	(174)	(15.9)	(26.3)	(37.3)
Observations	3275	3287	3283	3287
R-squared	0.01	0.00	0.00	0.00

Robust standard errors in parentheses, corrected for clustering at the community level. *** p<0.01, ** p<0.05, * p<0.1

Household level data. Excluding households with female leaders. Intent-to-treat estimators

Beneficiaries with productive investment package

Table 7a: Human Capital Outcomes for beneficiaries of productive investment package: Spill-overs

	Education		Consumption	
	Assisting to school 7-18 year olds	Number of days absent from school (7-25 year olds)	Log (food consumption per capita)	Log(total consumption per capita)
Productive investment package* share female leaders with productive investment package	0.0957** (0.047)	-0.665* (0.38)	0.130 (0.11)	0.287*** (0.10)
Productive investment package	0.0455** (0.022)	-0.172 (0.22)	0.298*** (0.058)	0.222*** (0.064)
Constant	0.759*** (0.013)	1.648*** (0.14)	8.114*** (0.037)	8.525*** (0.043)
Observations	2720	2678	1706	1703
R-squared	0.01	0.00	0.09	0.08

Robust standard errors in parentheses, corrected for clustering at the community level. *** p<0.01, ** p<0.05, * p<0.1

Individual data for education, household data for consumption variables. Excluding households with female leaders. Intent-to-treat estimator.

Table 7a: Human Capital Outcomes for beneficiaries of productive investment package: Spill-overs (cont.)

	Nutrition			
	<u>Number of days in the last week that child drank/ate:</u>			
	Fruit juice	Vegetables	Cheese	Meat
Productive investment package* share female leaders with productive investment package	1.095* (0.56)	1.261** (0.52)	1.454** (0.58)	0.535** (0.24)
Productive investment package	1.019*** (0.21)	0.395 (0.28)	0.825*** (0.27)	0.776*** (0.12)
Constant	2.571*** (0.13)	1.530*** (0.16)	1.910*** (0.15)	0.581*** (0.058)
Observations	1651	1654	1654	1653
R-squared	0.06	0.03	0.06	0.11

Robust standard errors in parentheses, corrected for clustering at the community level. *** p<0.01, ** p<0.05, * p<0.1

Data for children 0-8.5 years old. Excluding households with female leaders. Intent-to-treat estimator.

Table 7b: Economic activity outcomes for beneficiaries of productive investment package: Spill-overs

	Total income (per capita)	Income from commercial activities (per capita)	Income from non- agricultural self employment (per capita)	Income from agricultural wages (per capita)
Productive investment package* share female leaders with productive investment package	1633** (818)	204.1* (113)	273.4* (139)	-230.4 (152)
Productive investment package	26.61 (324)	31.09 (37.2)	60.22 (48.9)	46.33 (94.5)
Constant	3237*** (174)	72.24*** (15.9)	158.1*** (26.3)	457.6*** (37.3)
Observations	1700	1707	1707	1706
R-squared	0.01	0.01	0.01	0.00

Robust standard errors in parentheses, corrected for clustering at the community level. *** p<0.01, ** p<0.05, * p<0.1

Household level data. Excluding households with female leaders. Intent-to-treat estimators

Aspirations and attitudes

- Did female leaders' attitudes have a positive effect on the aspirations of other beneficiaries?

Attitude changes (and their contagious effect)

Table 9: Social dynamics and positive attitudes towards the future: beneficiaries with productive investment package

	No risk management: will not do anything or only pray to reduce impact of future shocks	Strong positive expectations about the future	Cheerful	Feels that moving forward in life	Sum positive feelings
Productive investment package* share female leaders with productive investment package	-0.130** (0.052)	0.148 (0.10)	0.242** (0.10)	0.0767 (0.089)	0.449** (0.22)
Productive investment package	0.0228 (0.027)	-0.0195 (0.055)	-0.0667 (0.049)	0.0870 (0.053)	0.00324 (0.13)
Observations	1661	1115	1113	1107	1107
R-squared	0.04	0.03	0.03	0.04	0.04

Robust standard errors in parentheses, corrected for clustering at the community level

*** p<0.01, ** p<0.05, * p<0.1

Controlling for age, gender, and education respondent, demographic structure of the household, and distance to health clinic and municipal headquarters

Data from primary caregivers of children between 0 and 8 (except column 1) Excluding leaders themselves. Intent-to-treat estimators

Attitude changes (cont.)

Table 9b: Social dynamics and positive attitudes towards the future: all beneficiaries

	No risk management: will not do anything or only pray to reduce impact of future shocks	Strong positive expectations about the future	Cheerful	Feels that moving forward in life	Sum positive feelings
Intent-to-treat* share female leaders with same package	-0.00512 (0.036)	0.0876* (0.045)	0.118*** (0.040)	0.0384 (0.052)	0.243** (0.099)
Intent-to-treat	0.000679 (0.022)	-0.00303 (0.040)	-0.00671 (0.036)	0.0894** (0.040)	0.0789 (0.092)
Observations	3196	2111	2110	2099	2098
R-squared	0.05	0.02	0.02	0.03	0.03

Robust standard errors in parentheses, corrected for clustering at the community level

*** p<0.01, ** p<0.05, * p<0.1

Controlling for age, gender, and education respondent, demographic structure of the household, and distance to health clinic and municipal headquarters

Data from primary caregivers of children between 0 and 8 (except column 1) Excluding leaders themselves. Intent-to-treat estimators

Attitude changes (cont.)

Table 9c: Social dynamics and negative attitudes and depression: all beneficiaries

	Index of negative feelings CESD internally standardized	CESD depression scale internally standardized	CESD depression scale
Intent-to-treat*	-0.233***	-0.233**	-2.452**
share female leaders with same package	(0.086)	(0.092)	(0.97)
	0.0407	0.0165	0.174
Intent-to-treat	(0.076)	(0.076)	(0.80)
Observations	2095	2094	2094
R-squared	0.05	0.04	0.04

Robust standard errors in parentheses, corrected for clustering at the community level

*** p<0.01, ** p<0.05, * p<0.1

Controlling for age, gender, and education respondent, demographic structure of the household, and distance to health clinic and municipal headq

Data from primary caregivers of children between 0 and 8 (except column 1) Excluding leaders themselves. Intent-to-treat estimators

Understanding social spillovers

- Results so far
 - Proximity to female leaders with the productive investment grant increases
 - human capital investments and income
 - aspirations and attitudes
- Potential underlying mechanisms for these spillovers?
 - Social interactions
 - Motivation and effort
 - Alternative explanation - economic spillovers

Social interactions

- Did the program affect social interactions between beneficiaries?
- Did the program affect participation in social activities?

Table 5: Average impact on social interactions

	Talked to others in community			Talked to leaders (last 7 days)			
	About food prices	About businesses	Beneficiaries with same package	Community leader	Health coordinator	Teacher	Promotora
All beneficiaries together							
Intent-to-treat	0.153*** (0.032)	0.225*** (0.020)		0.149*** (0.029)	0.107*** (0.032)	0.171*** (0.028)	
Constant	0.491*** (0.027)	0.108*** (0.016)		0.311*** (0.021)	0.403*** (0.024)	0.481*** (0.023)	
Observations	3965	3964		3666	3816	3905	
R-squared	0.02	0.05		0.02	0.01	0.02	
By benefit package							
Basic package	0.140*** (0.034)	0.0804*** (0.022)	0.805*** (0.018)	0.146*** (0.033)	0.104*** (0.033)	0.164*** (0.029)	0.774*** (0.022)
Training package	0.132*** (0.035)	0.0950*** (0.022)	0.838*** (0.015)	0.126*** (0.032)	0.106*** (0.036)	0.164*** (0.032)	0.833*** (0.015)
Productive investment package	0.186*** (0.034)	0.496*** (0.029)	0.852*** (0.015)	0.174*** (0.033)	0.110*** (0.035)	0.186*** (0.032)	0.844*** (0.018)
Constant	0.491*** (0.027)	0.108*** (0.016)		0.311*** (0.021)	0.403*** (0.024)	0.481*** (0.023)	
Observations	3965	3964	2796	3666	3816	3905	2601
R-squared	0.02	0.19	0.83	0.02	0.01	0.02	0.82

Robust standard errors in parentheses, corrected for clustering at the community level

Table 5: Average impact on social interactions (cont.)

	Participation in community activities (last 12 months)				Could ask help from somebody in the community	
	Workshops	Meetings	Parent-teacher association	Sport	In case of drought	In case of a plague
All beneficiaries together						
Intent-to-treat	0.214*** (0.034)	0.165*** (0.025)	0.0963*** (0.033)	0.0271* (0.015)	0.0586** (0.029)	0.0658** (0.030)
Constant	0.537*** (0.027)	0.750*** (0.023)	0.269*** (0.024)	0.0853*** (0.012)	0.708*** (0.024)	0.685*** (0.026)
Observations	3931	3932	3930	3930	3965	3965
R-squared	0.04	0.05	0.01	0.00	0.00	0.00
By benefit package						
Basic package	0.220*** (0.037)	0.162*** (0.026)	0.0742** (0.034)	0.0290* (0.017)	0.0649** (0.031)	0.0655** (0.032)
Training package	0.212*** (0.035)	0.164*** (0.026)	0.120*** (0.037)	0.0326* (0.018)	0.0453 (0.030)	0.0622* (0.031)
Productive investment package	0.211*** (0.037)	0.168*** (0.025)	0.0949*** (0.035)	0.0199 (0.017)	0.0655** (0.030)	0.0695** (0.033)
Constant	0.537*** (0.027)	0.750*** (0.023)	0.269*** (0.024)	0.0853*** (0.012)	0.708*** (0.024)	0.685*** (0.026)
Observations	3931	3932	3930	3930	3965	3965
R-squared	0.04	0.05	0.01	0.00	0.00	0.00

Robust standard errors in parentheses, corrected for clustering at the community level

*** p<0.01, ** p<0.05, * p<0.1

Motivation and effort

- Are female leaders or beneficiaries with the productive investment package and the vocational package more motivated?
- Proxy measure of effort:
 - Does the distance between houses of beneficiaries and female leaders affect social interactions?
 - Does this differ by package?
 - => Take advantage of the randomized allocation

Table 10a: Probability of talking to the program *promotora* in the last week: comparison between treatment households

	(1)	(2)	(3)	(4)
Training package	0.0539** (0.023)		0.0233 (0.025)	0.0477* (0.025)
Productive investment package	0.0652*** (0.021)		0.0321 (0.021)	0.0672*** (0.022)
Distance to nearest female leader		-0.00966*** (0.0033)		
Distance to nearest female leader*basic transfer package			-0.0149*** (0.0040)	
Distance to nearest female leader*training package			-0.00678** (0.0029)	
Distance to nearest female leader*productive investment package			-0.00660 (0.0057)	
Distance to nearest female leader with basic package				-0.00368*** (0.0011)
Distance to nearest female leader with training package				-0.00113* (0.00058)
Distance to nearest female leader with productive investment package				-0.000672 (0.00055)
Constant	0.715*** (0.023)	0.793*** (0.021)	0.773*** (0.025)	0.773*** (0.028)
Observations	2425	2425	2425	2157
R-squared	0.00	0.01	0.02	0.02

Robust standard errors in parentheses, corrected for clustering at the community level. *** p<0.01, ** p<0.05, * p<0.1

Sample: beneficiary households in treatment community, excluding female leaders themselves. Omitted category: basic package

Alternative explanation: economic spillovers?

- Do female leaders with the productive investment package increase local demand or affect availability and prices?

Table 12: Impacts of leaders with the productive investment package on prices and availability of products in treatment communities^a

	Coffee	Beans	Tomatoes	Meat	Potatoes	Corn
Availability at the community						
Share of female leaders with T3	0.0986 (0.27)	-0.0914 (0.12)	0.152 (0.36)	0.968** (0.43)	0.507 (0.43)	-0.167 (0.12)
Constant	0.875*** (0.093)	1.010*** (0.043)	0.763*** (0.12)	0.262* (0.15)	0.501*** (0.15)	1.034*** (0.043)
Observations	53	53	53	53	53	53
R-squared	0.00	0.01	0.00	0.09	0.03	0.04
Prices at the community						
Share of female leaders with T3	-1.943 (4.48)	0.669 (0.57)	1.961 (1.19)	-0.230 (1.01)	1.793 (1.28)	-0.149 (0.28)
Constant	19.33*** (1.56)	4.406*** (0.20)	4.122*** (0.42)	16.73*** (0.36)	6.092*** (0.45)	1.959*** (0.098)
Observations	53	54	54	54	54	54
R-squared	0.00	0.03	0.05	0.00	0.04	0.01

Table 13: Probability of buying food products in own community

	All	Beneficiaries productive investment package only
Intent-to-treat	-0.0533 (0.058)	-0.0691 (0.060)
Share of female leaders with productive investment package	-0.0366 (0.075)	-0.0451 (0.098)
Constant	0.606*** (0.035)	0.606*** (0.035)
Observations	3813	1948
R-squared	0.00	0.01

Conclusions

- Strong evidence that social spillover effects increased program impacts
 - proximity to female leaders with largest program package increases impacts on
 - Human capital and economic activities of other beneficiaries
 - Changing attitudes and aspirations
- Social spillovers likely facilitated by
 - increased social interactions due to program
 - higher motivation/effort by female leaders and beneficiaries of productive investment grant (and vocational training grant)

Implications and next steps

- Social interactions and changing aspirations might be important for economic empowerment and sustainability of program impacts
- More insights on sustainability of effects: third round of panel in 2008
- Opportunities/questions for further work
 - Social dynamics beyond female leaders (peer learning)
 - Implications for program design
 - Self-reported indicators versus experimental games

Table 6c: Differences in attitudes for leaders of 3 intervention groups

	Strong positive expectations about the future	Cheerful	Strongly Feels that moving forward in life
Outcomes			
Leaders with basic package (T1)	0.325	0.636	0.372
Leaders with training package (T2)	0.513	0.655	0.496
Leaders with productive investment package (T3)	0.414	0.727	0.566
Difference between leaders with different packages			
T2-T1	0.188***	0.0185	0.124*
T3-T1	0.0891	0.0909*	0.194***
T3-T2	-0.0991	0.0724	0.0701
Observations	332	333	333

Table 6b: Differences in economic activity outcomes for leaders of 3 intervention groups

	Income from commercial activities (per capita)	Income from non-agricultural self-employment (per capita)	Income from agricultural self-employment (per capita)	Income from agricultural wages (per capita)
LEADERS				
T2-T1	3.061	-58.60	55.60	-11.70
T3-T1	231.4***	252.0***	399.8**	47.64
T3-T2	228.3***	310.6***	344.2*	59.34
Observations	541	540	540	541

Based on standard errors clustered by community

*** p<0.01, ** p<0.05, * p<0.1