

# Financial Constraints and Entrepreneurial Choices

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# Introduction

# Motivation

- ▶ Entrepreneurship key factor for economic development (Schumpeter, 1934; ...; Rodrik, 2007; Ray, 2007; Naudé, 2010)
- ▶ Access to finance fundamental constraint of entrepreneurial activities (Banerjee Duflo, 2007; Karlan Morduch, 2010)
- ▶ Several empirical and policy issues:
  - ▶ How to identify the effect of improved access to finance?  
This is (almost) never random
  - ▶ How to design policies to promote entrepreneurship?  
Many failed attempts (Holtz-Eakin, 2000; Audretsch et al., 2007;..)
  - ▶ Which financial constraints are most binding?  
Liquidity, insurance, ...

# What we do

- ▶ We study the effects of an exogenous variation in income on the probability to become entrepreneur
- ▶ Shock induced by the Mexican welfare program *Progresa/Oportunidades*
  - ▶ Random treatment assignment: allows causal identification
  - ▶ Transfers for an extended and predictable time period: try disentangling liquidity vs. insurance provision
- ▶ Stylized but controlled environment to “simulate” the effect of improved access to finance on occupational choices

# Main Findings

1. Income shock significantly increases the likelihood of becoming entrepreneurs, both for unemployed and for salaried workers (ITT: increase of 20-25%)
  - ▶ For new entrepreneurs: investment in nonagricultural businesses, more targeted labor supply, increase in welfare
2. Occupational choices are more responsive to the size of future transfers than to the size of current transfers
  - ▶ Provision of insurance may be more important than provision of liquidity (at least after a (minimal) threshold)

## Related Literature

- ▶ Income shocks and entrepreneurial choices
  - ▶ Blanchflower-Oswald (1990, UK); Holtz-Eakin et al. (1994, US)
  - ▶ De Mel et al. (2008, Sri Lanka)
- ▶ Improving markets and entrepreneurial choices
  - ▶ Access to credit (Banerjee-Duflo (2005), Banerjee et al. (2009, India) Karlan Zinman (2010, Philippines))
  - ▶ Access to insurance (Morduch (1995), Giné-Yang (2009, Malawi))
- ▶ Effects of Progresa
  - ▶ Gertler et al. (2007): Progresa increased productive investments and so long-term welfare; Skoufias and Di Maro (2008): Progresa did not increase adult labor supply

# Progreso

## Program Description

- ▶ Conditional Cash Transfer (CCT) program targeted to poor households in rural Mexico, focus on children's education and health
  - ▶ Program not directed to entrepreneurship (possibly higher external validity)
  - ▶ Focus on the poor, whose income generating activities have been often considered inefficient
  - ▶ No repayment involved (no agency problems)
- ▶ Cash transfers given bimonthly to female head of household:
  1. Fixed food stipend conditional on visiting health clinics
  2. School attendance subsidy (varies by grade and gender)
- ▶ Median monthly benefits are 177 pesos (around 17 US\$), equivalent to 28% of total HH income (or 24% of HH expenditures)



## Experimental Sample

- ▶ 506 villages from 7 states in rural Mexico
- ▶ Random program phase-in:
  - ▶ 320 villages in March '98 ( $T = 1$ )
  - ▶ 186 villages in Nov '99 ( $T = 0$ )
- ▶ Survey waves:
  - ▶ Baseline (Oct 1997)
  - ▶ Three waves of treatment (Oct 1998, May 1999 and Nov 1999)
  - ▶ Sample attrition 11%, non response 17%: balanced both in terms of treatment and of pre-program characteristics
- ▶ Take-up very high: 94% (96%) in  $T = 1$  ( $T = 0$ ) elig HHs receive transfers within 18 months since program offering
- ▶ Random treatment assignment worked well

## Descriptive statistics

- ▶ Sample restricted to eligible adults (poor and more than 18 yrs old)
- ▶ Baseline stats:
  - ▶ 8% are entrepreneurs (self-employed or employers), 39% are salaried, 53% have no paid occupation (unemployed)
  - ▶ 25% of the entrepreneurs are women, 93% of the unemployed are women, 95% of the salaried are men
- ▶ Transitions *toward* entrepreneurship:
  - ▶  $ne_{i,t}^* = 1[ne_{i,t} > 0]$  if entrepreneur in  $t$  and either salaried or unemployed in the baseline
  - ▶ In control villages, 4% become entrepreneur, of which 20% are women and 75% were salaried
  - ▶ 34% of new entrepreneurs have more than one paid occupation (vs. 8% of salaried): need for self-insurance due more volatile income ( $RSD_{ne}=84\%$  vs.  $RSD_w=60\%$ )

# Main Effects

# Intention-to-Treat (ITT) Specification

- ▶ We estimate:

$$ne_{i,t} = \alpha T_I + X'_{i,t_0} \gamma + \delta_t + \eta_s + \epsilon_{i,t} \quad (1)$$

- ▶  $T_I$ : experimental Treatment assignment
- ▶  $X_{i,t_0}$ : pre-program control variables at individual, spouse, HH and village level
- ▶  $(\delta_t, \eta_s)$ : wave and state-level FEs
- ▶  $\alpha$  is the causal effect of the treatment on probability to become entrepreneur

**Table:** Probit Estimates: Main Program Impacts across Groups

	All Sample		Former Salaried		Former Unemployed	
	(1)	(2)	(3)	(4)	(5)	(6)
Treat	0.009 (0.004)***	0.007 (0.003)***	0.017 (0.008)**	0.015 (0.008)*	0.006 (0.003)**	0.004 (0.002)**
Controls	No	Yes	No	Yes	No	Yes
State Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Wave Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R-squared	0.033	0.124	0.040	0.055	0.046	0.199
Number of Obs	47219	46271	17421	17094	26680	26154
Number of Localities	504	500	496	492	504	500

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

NOTE: Marginal Effects reported for discrete change of dummy variable from 0 to 1. Standard Errors Clustered at the Locality Level

# Main Impacts Results

- ▶ Significant and robust effect of the program on likelihood of becoming entrepreneur
  - ▶ Magnitude: on average, 20-25% increase of new entrepreneurs due to the program; homogeneous across subgroups
- ▶ Further evidence:
  - ▶ T-C differences tend to vanish once the control group is incorporated
  - ▶ ITT for non-eligibles reveals no effects
- ▶ Other results:
  - ▶ No evidence of increased agricultural investment but rather of increased nonagricultural activities (carpentry, handicraft)
  - ▶ Same effect at the HH level (only 3% of new entrep are in HH with already an entrep)
  - ▶ Weak or no evidence on other occupational changes: entrep exit, unempl. vs. salaried, within salaried

# Mechanisms

# Conditionality

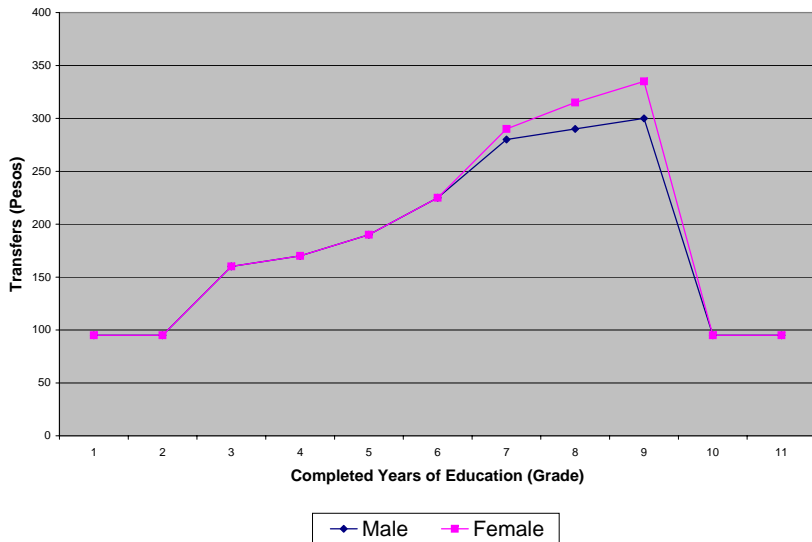
- ▶ Transfers are conditional on sending children to school → may push individuals into self-employment due to intra-household reallocation of labor
- ▶ How to exclude this channel?
  - ▶ Heterogeneous impacts depending on female, labor supply, costly take up reveal no effect
  - ▶ No significant change in hours worked (but more targeted toward main occupation)
  - ▶ Increase in welfare (labor earnings, nonfood expenditure)
- ▶ School conditionality *per se* does not seem important: treat transfers as income shock and try to distinguish liquidity and insurance constraints



## Variations in Transfer Size

- ▶ Beyond the variation due to the randomization, households differ in their composition and so in the pattern of transfers they are entitled to receive
- ▶ Look at whether the above effects differ according to current and future patterns of the transfers
  - ▶ Is one-shot income shock equivalent to steady flow of money?
  - ▶ Is it more important to receive money now or to expect money in the future?
- ▶ Possibly informative on the mechanisms (liquidity vs. risk)

Figure: Monthly Transfers per Child (April 1998)



# Conceptual framework

- ▶ Mass 1 of agents with wealth  $a$ ; CRRA utility  $u$  with risk aversion  $r$
- ▶ Two periods and two occupations: entrep -need  $k$  units of capital- or salaried
- ▶  $t=1$ : choose occupation to max  $U = u_1 + u_2$ ; get transfer  $C_1$
- ▶  $t=2$ : returns from occupation: salaried get  $w$ , entrep get  $y$  with prob  $p$  and zero otherwise,  $py > w + k$ ; get transfer  $C_2$
- ▶ No credit market and no saving technology

## Liquidity vs. insurance

- ▶ Entrep  $ne$  are those with  $a \geq k - C_1$  and  $r \leq r^*(C_2)$
- ▶ If no insurance constraints ( $r = 0$ ),  $ne = 1 - F(k - C_1)$ , and so

$$\frac{\partial ne}{\partial C_1} = f(k - t_1) > 0 \text{ and } \frac{\partial ne}{\partial C_2} = 0. \quad (\text{LIQ})$$

- ▶ If no liquidity constraints ( $k = 0$ ),  $ne = G(r^*(C_2))$ , and so

$$\frac{\partial ne}{\partial C_1} = 0 \text{ and } \frac{\partial ne}{\partial C_2} = g(r^*) \frac{\partial r^*}{\partial C_2} > 0. \quad (\text{INS})$$

# Isolating Exogenous Variations in Transfers

- ▶ Actual transfers  $C_{h,t}$  and  $C_{h,t+1}$  depend on (exogenous) HH composition and on (endogenous) take-up decisions
- ▶ In order to isolate the former, we use instead the corresponding potential transfers  $P_{h,t}$  and  $P_{h,t+1}$
- ▶ We then consider for *treated* localities:

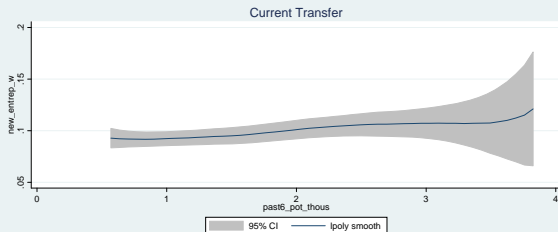
$$ne_{i,t} = \alpha P_{h,t} + X'_{i,t_0} \gamma + \delta_t + \eta_s + \epsilon_{i,t}, \quad (2)$$

$$ne_{i,t} = \beta P_{h,t+1} + X_{i,t_0} \gamma + \delta_t + \eta_s + u_{h,t} \quad (3)$$

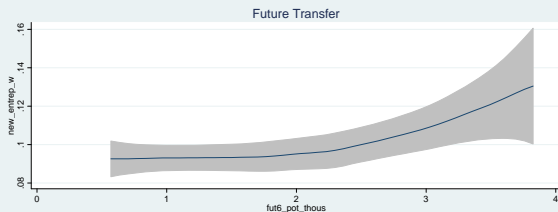
- ▶ As validation of the exclusion restrictions, placebo tests on non eligibles (poor in *control* localities or *nonpoor* in treated localities) show no effects

## Current vs Future Transfers

### Local Linear Regression Smoother



kernel = epanechnikov, degree = 1, bandwidth = .43, pwidth = .65



kernel = epanechnikov, degree = 1, bandwidth = .56, pwidth = .84

Table: Current and Future Transfers: Levels

	(1)	(2)	(3)	(4)	(5)	(6)
Current (6 months)	0.0085 (0.0046)*	0.0028 (0.0055)				
Future (6 months)			0.0100 (0.0044)**	0.0110 (0.0050)**		
Future (1 year)					0.0042 (0.0022)*	0.0035 (0.0025)
Controls	No	Yes	No	Yes	No	Yes
State Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Wave Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Obs	1.06e+04	1.04e+04	1.06e+04	1.04e+04	1.06e+04	1.04e+04
R-squared	0.0372	0.0505	0.0377	0.0509	0.0374	0.0506
Number of Localities	315	313	315	313	315	313

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

NOTE: Standard Errors Clustered at the Locality Level

Table: Current and Future Transfers: Differences

	(1)	(2)	(3)	(4)
Future-Current (6 months)	0.0282 (0.0091)***	0.0261 (0.0091)***	0.0354 (0.0120)***	0.0357 (0.0121)***
Current (6 months)		-0.005 (0.006)		-0.004 (0.007)
Past Trend (6 months)			-0.0015 (0.0177)	0.0081 (0.0193)
Controls	Yes	Yes	Yes	Yes
State Dummies	Yes	Yes	Yes	Yes
Wave Dummies	Yes	Yes	Yes	Yes
Number of Obs	10104	10104	6484	6314
R-squared	0.0513	0.0488	0.0547	0.0538
Number of Localities	3130	3090	3070	3040

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

NOTE: Standard Errors Clustered at the Locality Level



## Current vs. Future Transfers

- ▶ Current size of the transfer does not seem to matter
  - ▶ Possibly as financial barriers to entry into self-employment are not very high (McKenzie-Woodruff (2006) in urban Mexico)
  - ▶ Upper bound is around 100 pesos per month (median labor income 500 pesos)
- ▶ Future size of the transfer matters
  - ▶ Substantial magnitude: one std. dev increase in  $P_{h,t+1}$  induce a 25% increase in  $ne_{i,t}$
  - ▶ Consistent with insurance story: future eligibility increases willingness to take risk today

# Conclusion

# Conclusion

- ▶ Significant effects of the treatment on the probability to become entrepreneurs
- ▶ Not due to push factors
- ▶ Sensitivity to future rather than current transfer size

## Conclusion (cont'd)

### ► Limitations

- Short-term effects (data until 2003, may be exploited)
- Partial equilibrium (but no significant effects on entrepreneurial exit, no significant effects on nonpoor)

### ► Policy implications

- Financial barriers to entry need not be beyond reach
- Need for self-insurance may be the real binding constraint
- Steady flow of income vs one-shot income shock

**Table:** Baseline Characteristics and Covariate Balance

Variable	Mean	Std. Dev.	Mean Diff	T-Stats
<b>Main Occupation</b>				
Self-Employed	0.074	0.262	0.019	1.62
Unemployed	0.534	0.499	-0.005	-0.51
Salaried	0.392	0.488	-0.013	-1.22
<b>Individual Characteristics</b>				
Age	39.263	13.877	-0.254	-0.65
Female	0.541	0.498	0.006	1.09
Income Main Occup.	247.445	344.452	-11.243	-1.29
Income Other Occup.	56.354	339.52	-4.599	-0.72
Labor Supply	20.054	23.148	-0.002	-0.01
Years of Education	2.707	2.628	0.068	0.51
<b>Household's Assets</b>				
Asset Index (Score)	638.14	82.489	0.399	0.23
Land Used	1.219	2.697	-0.071	-0.62
Land Owned	0.561	0.496	0.028	0.97
Working Animals	0.318	0.466	0.025	1.10

**Table:** Baseline Characteristics and Covariate Balance (cont'd)

Variable	Mean	Std. Dev.	Mean Diff	T-Stats
<b>Household's Composition</b>				
Female HH Head	0.048	0.213	-0.004	-0.46
child05	0.700	0.458	-0.003	-0.19
child612	0.708	0.455	-0.014	-1.20
child1315	0.394	0.489	-0.011	-0.76
child1621	0.370	0.483	0.003	0.35
men2139	0.606	0.489	0.002	0.16
men4059	0.352	0.478	-0.002	-0.17
men60	0.128	0.334	0.002	0.11
women2139	0.692	0.462	-0.014	-0.74
women4059	0.295	0.456	-0.003	-0.43
women60	0.125	0.33	-0.002	-0.29
<b>Locality Characteristics</b>				
Number of Shocks	1.62	1.088	-0.036	-0.69
Share of Entrepreneurs	0.092	0.086	0.003	-0.18
Crop Diversification	2.336	0.705	-0.014	1.41

Table: Main Program Impacts: Further Evidence

Sample	All (1)	Former Salaried (2)	Former Unempl (3)	All (4)	Former Salaried (5)	Former Unempl (6)
Treat*Wave1	0 (0.005)	-0.003 (0.014)	0.001 (0.003)			
Treat*Wave2	0.012 (0.005)**	0.028 (0.016)**	0.005 (0.004)			
Treat*Wave3	0.013 (0.007)**	0.025 (0.020)	0.009 (0.005)**			
Treat*Wave4	0.008 (0.005)	0.013 (0.014)	0.008 (0.004)**			
Treat*Wave5	0.003 (0.005)	0.001 (0.013)	0.004 (0.003)			
Treat				0.004 (0.003)	0.010 (0.009)	0.002 (0.002)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
State Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Wave Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Obs	76560	28365	43098	34590	10643	20838
Pseudo R-squared	0.128	0.063	0.199	0.112	0.051	0.133
Number of Localities	501	496	501	479	461	474

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

NOTE: Standard Errors Clustered at the Locality Level

Table: Investment

	Carpenter (1)	Handicraft (2)	Agri Expend (3)	Animal (4)	Agri Product (5)	Land (6)
Treat*New Entrep	0.015 (0.005)***	0.038 (0.021)*	56.983 (57.937)	30.883 (34.977)	-3.946 (8.337)	-0.037 (0.044)
Treat	-0.005 (0.004)	0.011 (0.007)*	-50.395 (34.229)	0.841 (2.347)	-6.583 (4.477)	0.044 (0.023)*
New Entrep	-0.003 (0.002)	0.030 (0.011)***	-112.147 (51.669)**	2.738 (8.525)	5.423 (5.832)	0.083 (0.034)**
Controls	Yes	Yes	Yes	Yes	Yes	Yes
State Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Wave Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Obs	53195	53195	15996	17584	15617	35333
R-squared	0.038	0.094	0.079	0.006	0.009	0.081
Number of Localities	503	503	481	497	497	497

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

NOTE: Standard Errors Clustered at the Locality Level



Table 9: Conditionality

	Labor Supply (1)	Female (2)	Non Enroll (3)	Non Elig (4)	Prim vs. Sec (5)
Treat*Labor	0.00005 (0.0004)				
Labor	-0.0002 (0.0003)				
Treat*Female		0.052 (0.039)			
Female		0.066 (0.042)*			
Treat*Non Enroll			-0.005 (0.012)		
Non Enroll			0.010 (0.011)		
Treat*Non Elig				-0.006 (0.009)	
Non Elig				0.019 (0.011)*	
Treat*Prim Sec					0.007 (0.023)
Prim vs. Sec					-0.043 (0.025)*
Treat	0.012 (0.020)	0.013 (0.008)	0.018 (0.010)*	0.016 (0.008)*	0.012 (0.021)
Controls	Yes	Yes	Yes	Yes	Yes
State Dummies	Yes	Yes	Yes	Yes	Yes
Wave Dummies	Yes	Yes	Yes	Yes	Yes
Number of Obs	16966	17094	12630	17094	8744
Pseudo R-squared	0.055	0.056	0.056	0.056	0.054
Number of Localities	492	492	488	492	480

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Note: Standard Errors Clustered at the Locality Level

Table: Welfare and Labor Supply

	Labor Earn (1)	Non-food Exp (2)	Food Cons (3)	Hrs Work (4)	Days Work (5)	Second Occup (6)
Treat*New Entrep	17.3891 (8.0554)**	33.0034 (13.9436)**	12.5524 (9.7545)	0.0437 (0.1930)	-0.0845 (0.1793)	-0.1174 (0.0551)**
Treat	-3.9018 (4.0389)	16.7696 (7.5122)**	17.9500 (5.4518)***	-0.0173 (0.0340)	-0.0380 (0.0413)	-0.0100 (0.0088)
New Entrep	-77.6978 (6.0736)***	-22.4413 (11.7564)*	-9.4140 (8.1597)	-0.1685 (0.1433)	-0.2191 (0.1341)	0.2353 (0.0449)***
Controls	Yes	Yes	Yes	Yes	Yes	Yes
State Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Wave Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Obs	32988	33036	30863	10441	15219	10763
R-squared	0.1517	0.1204	0.0302	0.0204	0.0320	0.0513
Number of Localities	494.0000	495.0000	495.0000	488.0000	488.0000	483.0000

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

NOTE: Standard Errors Clustered at the Locality Level

**Table:** Current and Future Transfers: Effects on Non eligibles

Sample	Poor in Control Villages			Non-poor in Treated Villages		
	(1)	(2)	(3)	(4)	(5)	(6)
Current	0.004 (0.006)			-0.015 (0.009)		
Future (6 months)		-0.002 (0.006)			-0.012 (0.008)	
Future (1 year)			0.0001 (0.003)			-0.008 (0.004)*
Controls	Yes	Yes	Yes	Yes	Yes	Yes
State Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Wave Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of Obs	6665	6665	6665	6334	6334	6334
R-squared	0.012	0.012	0.012	0.028	0.028	0.028
Number of Localities	179	179	179	290	290	290

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

NOTE: Standard Errors Clustered at the Locality Level