Insurance and the Extended Family

Manuela Angelucci
University of Arizona and IZA

Giacomo De Giorgi
Stanford University

Marcos A.Rangel
University of Chicago

Imran Rasul
University College London

May 5, 2008

Yale University

Motivation

- Evidence of risk sharing in Progresa villages [Angelucci and De Giorgi, 2008], but inefficient
- Insurance may exist only within sub-groups. [e.g. Fafchamps and Lund, 2003; Bloch, Genicot, and Ray 2006; Bramoulle and Kranton 2006; Mazzocco and Saini, 2007; Mobius and Szeidl, 2007; Ambrus et al., 2008].
- Families are potentially one such group: repeated interactions between few members, high information, altruism, intergenerational investments, additional enforcement mechanisms.
- Full insurance typically rejected at the village level [e.g. Townsend, 1994], but stronger evidence of risk pooling within ethnic groups, castes, and family and friends.
- Relevant to understand: 1) scope for insurance policies; 2) role of informal institutions in developing countries.

The questions

1. Do households with and without relatives in the village (i.e. connected and isolated, or K and I) look similar? Try to infer whether different *need* or *preference* for insurance. [Yes]

2. Is the extended family a relevant insurance unit? [Yes]

3. Is consumption smoother for K than I households? [Yes, but so what?]

4. Do K and I households engage in equally costly activities to smooth consumption? [Yes]

5. What network characteristics explain degree of insurance among the connected? [in progress]

How Do We Answer Our Questions?

- Use data from *Progresa* in rural Mexico (cash transfers to the poor; 22% of income; 75% of households eligible).
- Exploit **three** features of the data:

1. **census** of 506 villages in rural Mexico (20,000 households). Panel has 8 waves (1997 to 2003); data on consumption, income, shocks, transfers.
2. **village randomization** of *Progresa* in 1998-1999 with eligibles and ineligibles in the same small village to observe exogenous income shock (normally endogenous).
3. information on **surnames** and Hispanic naming convention to identify the extended family (normally unobserved).

Preliminaries: Identifying the Extended Family

- Mexicans have two surnames: inherited from the father and mother's paternal lineage;
- for example, former Mexican president Vicente Fox Quesada is identified by his given name (Vicente), his father's paternal name (Fox) and his mother's paternal name (Quesada);
- respondents were asked to provide the – (i) given name; (ii) paternal surname; (iii) maternal surname, for each household member;
- hence couple-headed households have four associated surnames.

Reliability of Constructed Family Links

- never exploit single-name matches across households
- 97% of households defined to have at most two parental households present in the village
- male heads have more extended family ties than spouses – female marriage migration [Rosenzweig and Stark 1989]
- external validity: consistent with evidence from MxFLS
- some single-headed households likely mis-classified as isolated.

Family Networks: Descriptives (1)

	Network Size	Size/# Households
Mean	7.76	.167
SD	(9.65)	(.149)

One observation per family network.

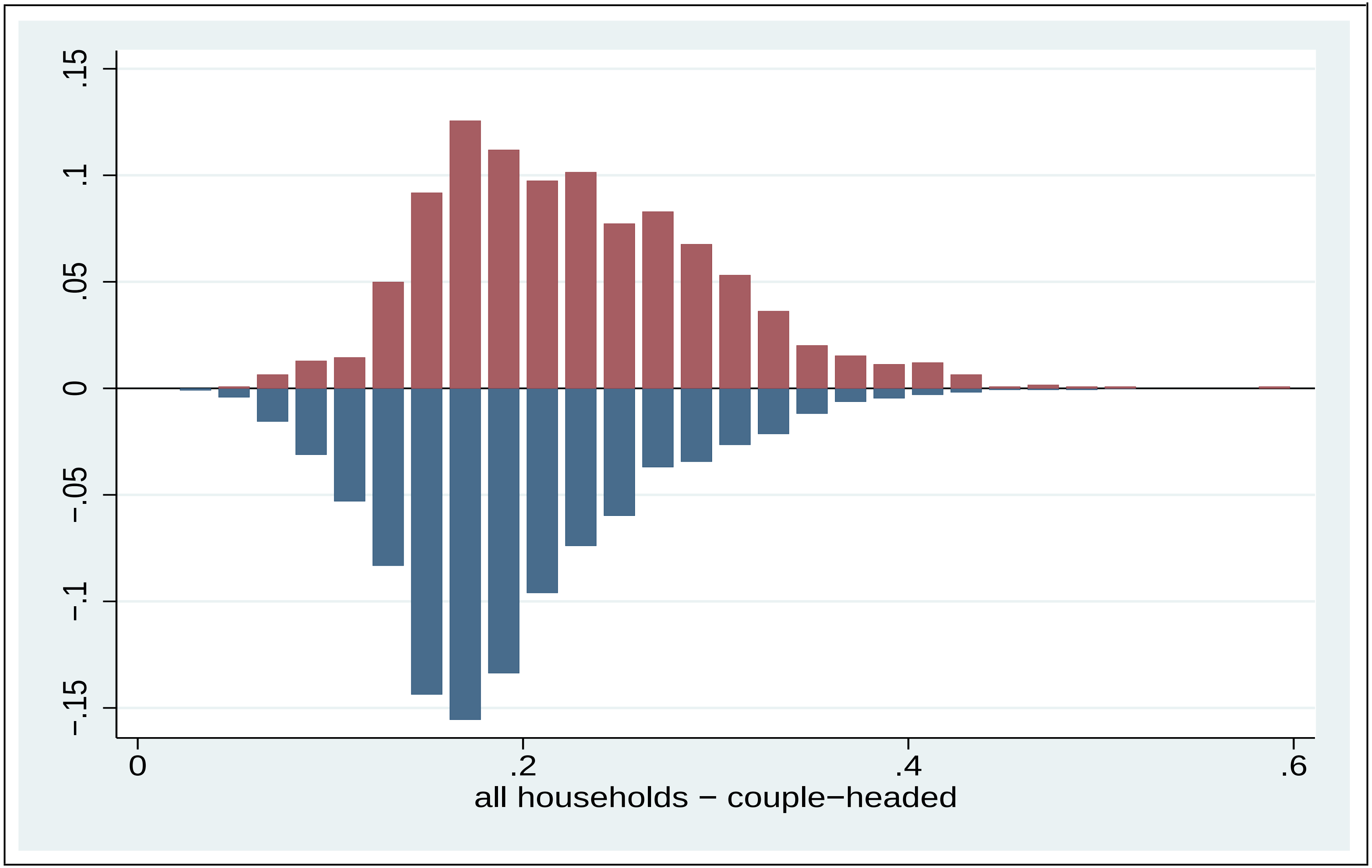
Family Networks: Descriptives (2)

- 20% of households are isolated (I).
- About 2200 networks.
- 40% of networks have size=2.
- K and I equally likely to be eligible for Progresa.
- About 50% of networks are a mix of eligibles and ineligibles ($\frac{2}{3}$ of networks with size>2).

Q1: Do K and I households look similar? Yes

- Since family formation is endogenous, K and I households may have different need/preference for insurance. However,
  1. No big differences. Main differences are life-cycle effects: the isolated are older, hence have fewer young children, lower literacy, more livestock, and less temporary US migration.
  2. Consumption, income, wealth index, employment, land, and asset ownership are mainly not statistically different.
  3. No assortative matching in wealth. Same weather shocks.
  4. Larger longitudinal income variance for the isolated (Income CV = 0.73 (sd=0.36) vs 0.70 (sd=0.34)).

The propensity score: $P(I = 1|X)$



Within/between wealth variance

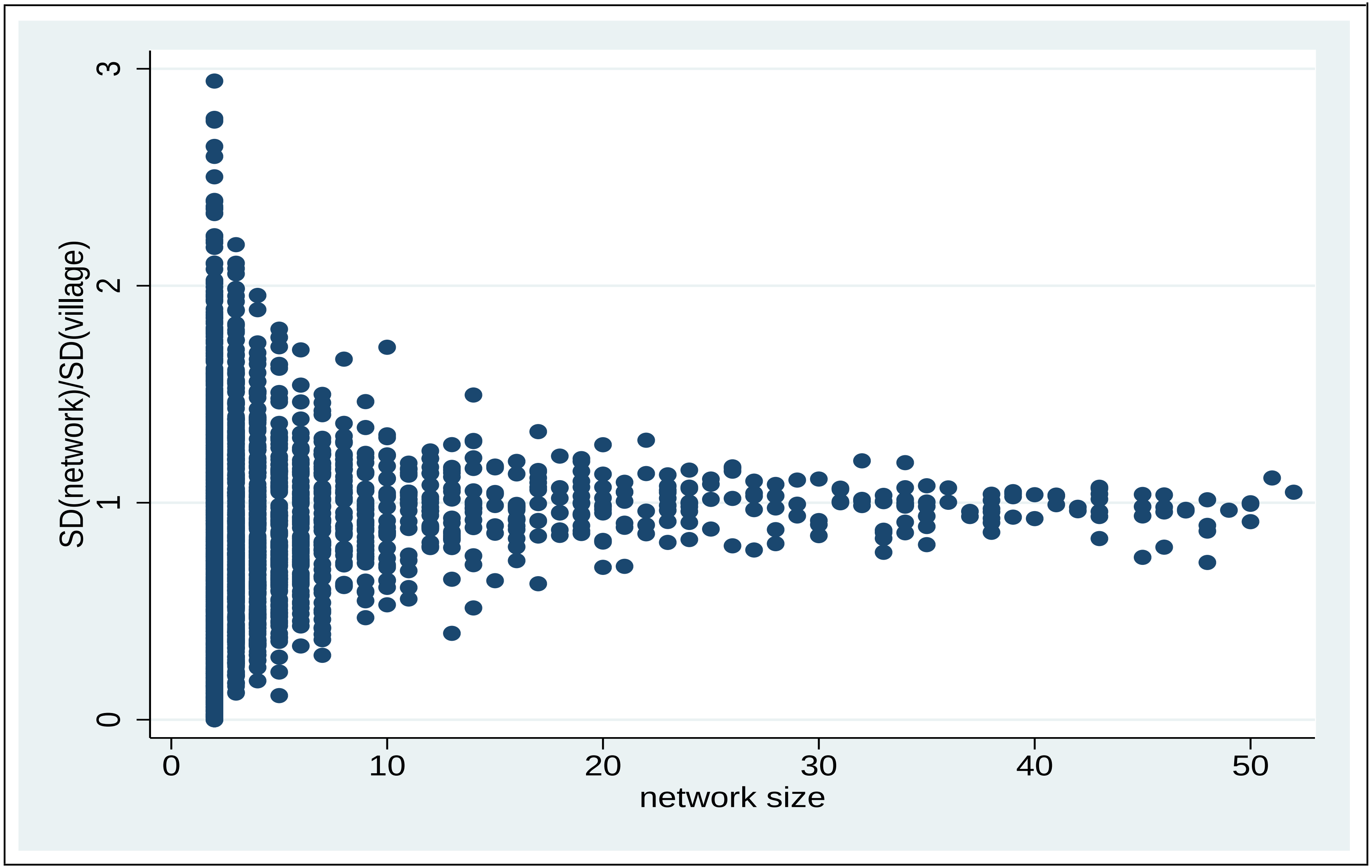


Table 1: Correlation of natural disasters in a pair of households

	Same network	Same village
Drought	0.29	0.27
SE	0.01	0.02
Flood	0.21	0.19
SE	0.02	0.05
Frost	0.27	0.24
SE	0.02	0.05
Fire	0.08	0.14
SE	0.04	0.15
Pest	0.17	0.19
SE	0.02	0.05

Q2: Is the extended family a relevant insurance unit?

Key ideas:

- No full insurance if there are transaction costs.
- Intuition for transaction costs: reduced form of information, incentives, enforcement problems.
- Transaction costs likely lower for members of an extended family than for unrelated households, as there is better access to information, monitoring is cheaper, altruism and enforcement mechanisms.
- Thus, **more insurance among connected households**.
- **No insurance** between households if transaction costs are too high.

The model

- Two infinitely lived agents, $i \in \{1, 2\}$, with instantaneous utility function $u_i = (1 - \delta) \ln c_i$, a rate of inter-temporal preference $\delta < 1$, no storage technology, and no leisure.
- Each agent receives a random endowment $y_i(s)$ that varies in different states of the world $s \in S$, each occurring with positive probability $\pi(s)$, $\sum_s \pi(s) = 1$.
- Agents smooth consumption making transfers $d(s)$ to each other.
- With positive transaction costs, α, a transfer d from agent 2 costs her $(\alpha)d$.
- When α "too big" there is no risk-sharing: each agent consumes her own endowment and the transfer $d = 0$.

The maximization problem (*identical Pareto weights*)

$$max_d U = \sum_s \pi(s) \left[\ln c_1(s) + \ln c_2(s)\right]$$

$s.t.$

$$c_1(s) = y_1(s) + d(s)$$

$$c_2(s) = y_2(s) - (1 + \alpha)d(s)$$

$$y_1(s) + y_2(s) = c_1(s) + c_2(s) + \alpha d(s)$$

$$c_1(s), c_2(s) > 0; d(s) \geq 0$$

FOC's

$$c_1^*(s) = \frac{1}{2(1+\alpha)}[Y(s) + \alpha y_1]$$

$$c_2^*(s) = \frac{1}{2}[(1+\alpha)Y(s) - \alpha y_2]$$

$$d^*(s) = \frac{\frac{y_2}{(1+\alpha)} - y_1}{2}$$

1. full insurance (consumption depends only on aggregate resources) if $\alpha = 0$, $c_1^* = c_2^* = \frac{Y}{2}$;
2. Transfer is a negative function of transaction costs. $\frac{\partial d^*}{\partial \alpha} < 0$.
3. $d^* = 0$ if $\alpha \geq \bar{\alpha} \equiv \frac{y_2 - y_1}{y_1}$ (consumption equals own endowment).

Testable hypotheses

H_0: **insurance occurs only within the extended family**

- We test whether eligible households share risk with a) connected (K) and b) isolated (I) ineligible households.
- If agent 2 is eligible households and agent 1 is ineligible households then as y_2 increases (through Progresa):
  1. c_1^{*K} and d_1^{*K} should increase, but not c_1^{*I} and d_1^{*I}.
  2. c_1^{*K} should increase only if there are eligible households in the network.
- These tests exploit the Progresa transfers and the village randomization, which provide a partial-population experiment [Moffitt, 2001].

Indirect effects of Progresa: the prequel

Recall the previous findings (Angelucci and De Giorgi, 2008). Progresa:

- increases average consumption and net transfers for ineligible households;
- does not change income (at least not differentially between control and treatment villages).

Data structure

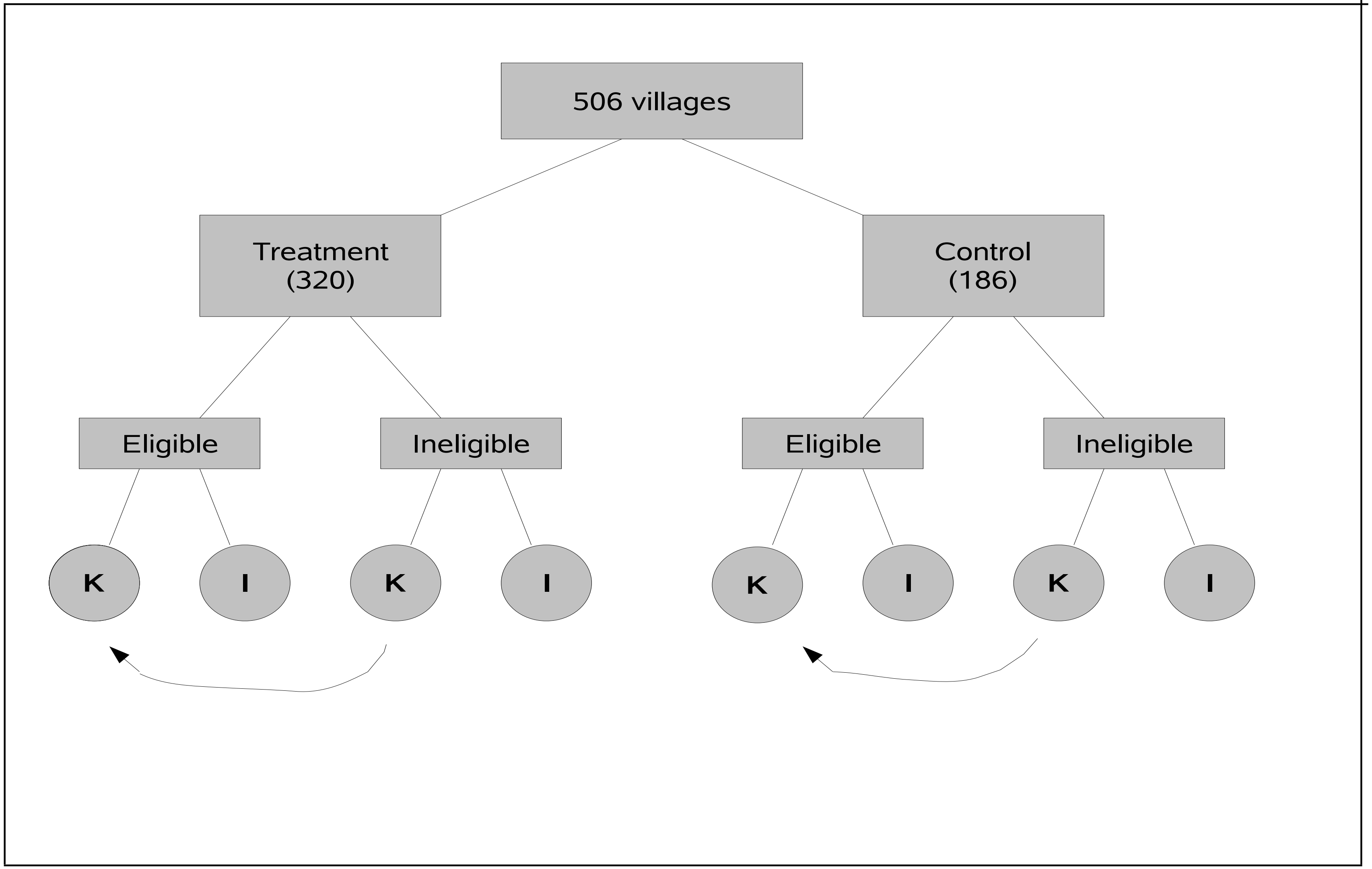


Table 2: Indirect effect of Progresa on food consumption

	(1)	(2)	(3)	(4)
	1999			
	Diff-in-diff		Cross Section	
	All households			
ITE^K	28.45	14.20	17.39	10.44
	[12.60]**	[9.18]	[8.90]**	[6.09]*
Obs	6366	6335	6366	6335
ITE^I	-13.94	-9.88	-6.22	2.46
	[17.07]	[15.55]	[13.91]	[11.19]
Obs	2103	2094	2103	2094
	Couple-headed only			
ITE^K	26.54	18.58	17.04	10.87
	[11.20]**	[8.90]**	[8.42]**	[6.40]*
Obs	5521	5503	5521	5503
ITE^I	-14.73	1.29	-28.62	-6.69
	[20.14]	[16.56]	[17.98]	[12.48]
Obs	1469	1464	1469	1464

Controlling for 1997 hhold traits, state and time effects. SE clustered at the village level. (1) and (3) drop extreme values, while (2) and (4) top and bottom 0.25%.

Table 3: ITE of Progresa on food consumption for network members with and without eligible relatives

	No eligible relatives	Up to 30% eligible	> 30% eligible
		Cross section	
ITE^K	-15.18	0.20	19.28
	[30.85]	[18.51]	[9.80]**
Obs.		6366	
		Difference-in-difference	
ITE^K	21.26	-3.26	31.96
	[39.20]	[25.56]	[13.14]**
Obs.		9979	

Difference-in-difference OLS estimates, controlling for 1997 household characteristics, state and time effects. The percentage of eligible is the fraction of eligible households in the network. Standard errors clustered at the village level.

Table 4: Ineligible log-food consumption as a function of log-transfer per network member

	Treatment villages		
	OLS	IV	IV p>.30
ln(actual transfer)	0.078	0.133	0.205
	[0.025]***	[0.058]**	[0.097]**
Obs.	3353	3353	2409
		Reduced form	
		OLS	OLS p>.30
ln(potential transfer)		0.091	0.143
		[0.041]**	[0.067]**
Obs.		3353	2409
	Control villages		
		OLS	OLS p>.30
ln(potential transfer)		-0.006	-0.169
		[0.050]	[0.111]
Obs.		1230	829

Same results for network size>2.

Elasticity= 0.12 (0.17) for all treated (for p>.30).

Table 5: Treatment effects on monthly consumption per adult equivalent for connected eligible households, 1999.

	Food consumption	All consumption
	Networks with both eligibles and ineligibles	
ATE	28.104	34.355
	[5.860]***	[7.646]***
Obs	10883	10883
ITE per eligible	8.512	8.618
	[3.517]**	[4.768]*
Obs	5478	5472
Transfer per eligible	63.93	63.93
ATE share	**0.44**	**0.54**
ITE share	0.13	0.13
	Networks with eligibles only	
ATE	31.226	38.569
	[7.421]***	[10.358]***
Obs	5627	5627
Transfer per eligible	55.5	55.5
ATE share	**0.56**	**0.69**

Table 6: Extended families and the indirect effect of Progresa on loans and transfers

	Informal loans			Transfers		
	Likelihood	Amount		Likelihood	Amount	
	Probit	OLS	Tobit	Probit	OLS	Tobit
			All ineligible households			
ITE connected	0.014	8.569	4.58	0.007	2.51	1.12
	[0.007]**	[4.395]*	[2.65]*	[0.005]	[1.29]*	[0.46]***
ITE isolated	-0.001	0.806	0.60	0.004	1.87	0.22
	[0.010]	[7.223]	[4.52]	[0.008]	[2.62]	[0.70]
Obs.	9105	9097	9097	9012	9163	9163
			Couple-headed ineligible households			
ITE connected	0.012	7.897	5.91	0.006	2.068	1.12
	[0.007]*	[4.619]*	[3.14]*	[0.004]*	[1.247]*	[0.49]**
ITE isolated	-0.003	-7.163	-2.32	-0.002	2.203	-0.13
	[0.011]	[9.365]	[6.15]	[0.006]	[1.844]	[0.88]
Obs.	7541	7530	7530	7557	7562	7562

Table 7: The indirect effect of Progresa on loans and transfers for connected households with and without related program recipients

	Informal loans			Transfers		
	Likelihood	Amount		Likelihood	Amount	
	Probit	OLS	Tobit	Probit	OLS	Tobit
	Connected ineligible households					
ITE eligible	0.050	32.81	31.62	0.006	-3.688	-0.59
relatives	[0.029]**	[10.61]***	[8.27]***	[0.006]	[5.966]	[0.99]
ITE ineligble	0.006	3.95	2.22	0.008	3.025	1.12
relatives	[0.006]	[4.31]	[2.63]	[0.005]	[1.253]**	[0.43]***
Obs.	6754	6775	6775	6724	6849	6849

OLS estimates pooling the three post-program waves for November 1998, May 1999, and November 1999, controlling for 1997 household characteristics, state and time effects. The estimated coefficients without adding any covariates are similar in magnitude and significance to the ones reported above. Standard errors clustered at the village level.

Q2: Is the extended family a relevant insurance unit? Yes

- Separate insurance groups: connected households share risk together but not with isolated households
- Significant increase in consumption only for households in networks with a critical mass of eligible households
- Eligible households consume smaller share of transfer if they are related to ineligible households: for each dollar transferred to eligible members, food (all) consumption of eligible and ineligible network members increases by 44 (54) and 13 cents. Eligible households, without ineligible relative increase, food (all) consumption by 56 (69) cents.
- Increase in informal loans to those related to eligible households.

Is it really the family?

- Redo part of the analysis for other possible groups: 1. Land owners (e.g. Townsend, 1994) (60%) and 2. Indigenous (35%)
- No differential ITE's along the above dimensions. Further, no "over-and-above" effects

Q3: Is consumption smoother for K than I households?

- If the isolated cannot share risk within the village, then they may achieve lower degree of insurance.
- Compare consumption and income variance for connected and isolated households.
- Consumption smoother for the connected (in absolute level and relative to income variance). However, not clear which group has more insurance.
- Mace/Townsend regressions do not make much sense here: any advice?

Consumption variances

	Log of consumption/income CV		
	Food	Non-Food	Total Income
Isolated	0.06	0.03	0.02
SE	[0.010]***	[0.009]***	[0.012]**
Constant	-1.14	-0.46	-0.49
SE	[0.007]***	[0.006]***	[0.009]***
Observations	22200	22178	20169

Table 8: Full-insurance regressions by Family type (Mace/Townsend)

	Connected	Isolated
	Total Income	
LnC	0.97	0.98
se	[0.007]***	[0.019]***
Lny	0.02	0.03
se	[0.002]***	[0.004]***
Obs.	55965	16890
	Weather shocks	
LnC	0.97	1.00
se	[0.007]***	[0.02]***
Shock	0.03	0.05
se	[0.007]***	[0.013]***
Obs.	56214	16988

Q3: is smoothing consumption costlier for I households? No

- When households are close to subsistence, the need for stable consumption is very high.
- Look at whether isolated households engage in costlier activities in response to negative shock.
- Questions: do isolated households hit by bad shocks 1) move their kids from schooling into labor 2) sell their assets/livestock more than connected households?
- Answers: not really.

	All	Couple-headed	Landed	Landed and c-headed	All	Couple-headed	Landed	Landed and c-headed
	Age: 8 to 14				Age: 15 to 18			
	ΔProbability of working							
Isolated	0.004	0.001	-0.012	-0.017	0.000	0.006	-0.004	-0.005
	[0.014]	[0.016]	[0.019]	[0.021]	[0.016]	[0.019]	[0.021]	[0.024]
Weather	0.404***	0.407***	0.408***	0.408***	0.283***	0.288***	0.294***	0.295***
shock	[0.031]	[0.031]	[0.036]	[0.037]	[0.024]	[0.024]	[0.028]	[0.028]
IxWeather sh.	0.005	0.007	0.035	0.045	0.006	0.003	0.015	0.020
	[0.029]	[0.031]	[0.036]	[0.039]	[0.030]	[0.034]	[0.037]	[0.041]
Health	-0.017	-0.010	-0.003	0.001	-0.048*	-0.044*	-0.061**	-0.061**
shock	[0.021]	[0.022]	[0.025]	[0.025]	[0.025]	[0.026]	[0.028]	[0.029]
IxHealth Sh.	-0.004	0.013	-0.049	-0.044	-0.028	0.042	0.007	0.061
	[0.037]	[0.043]	[0.047]	[0.055]	[0.046]	[0.052]	[0.055]	[0.060]
	ΔWork hours in previous week							
Isolated	0.013	-0.135	-0.557	-0.595	-1.741	-0.685	-0.974	-0.706
	[0.414]	[0.437]	[0.569]	[0.637]	[1.440]	[1.479]	[1.956]	[2.190]
Weather Sh.	0.088	0.241	0.317	0.485	0.802	0.030	-0.545	-0.910
	[0.371]	[0.395]	[0.515]	[0.543]	[1.370]	[1.390]	[1.449]	[1.560]
IxWeather Sh.	-0.491	-0.804	-0.378	-0.703	-0.290	-0.816	-0.601	0.397
	[0.541]	[0.590]	[0.754]	[0.832]	[2.784]	[2.961]	[3.415]	[3.972]
Health	0.567	0.538	1.290	1.294	2.200	2.846	0.713	0.877
shock	[0.981]	[1.062]	[1.446]	[1.546]	[1.708]	[1.835]	[1.955]	[2.077]
IxHealth Sh.	-0.605	-0.035	-1.618	-1.324	8.885	8.192	10.345	12.657
	[1.163]	[1.201]	[1.642]	[1.769]	[6.143]	[6.598]	[7.055]	[8.495]
Observations	11560	10429	7373	6735	7432	6572	5116	4601

	All	Couple-headed	Landed	Landed and c-headed	All	Couple-headed	Landed	Landed and c-headed
			Δhorse				Δdonkey	
Isolated	-0.000	-0.002	-0.002	-0.001	0.000	-0.001	0.002	0.000
	[0.002]	[0.002]	[0.004]	[0.003]	[0.002]	[0.002]	[0.004]	[0.004]
IxWeather Sh.	-0.002	-0.001	-0.001	-0.003	0.002	0.001	0.004	0.001
	[0.003]	[0.003]	[0.005]	[0.005]	[0.003]	[0.003]	[0.005]	[0.005]
Weather	-0.000	-0.001	-0.002	-0.003	0.002	0.002	0.003	0.002
shock	[0.002]	[0.002]	[0.003]	[0.003]	[0.002]	[0.002]	[0.003]	[0.003]
IxHealth Sh.	0.000	0.005	-0.001	0.005	0.000	0.004	-0.001	0.008
	[0.006]	[0.006]	[0.010]	[0.009]	[0.007]	[0.007]	[0.009]	[0.009]
Health	-0.003	-0.004	-0.004	-0.004	-0.006*	-0.007**	-0.009**	-0.010**
shock	[0.003]	[0.003]	[0.004]	[0.005]	[0.003]	[0.003]	[0.004]	[0.004]
Observations	60414	51246	36891	31747	60311	51144	36840	31685
			Δox				Δgoat	
Isolated	0.002	0.001	0.001	-0.001	0.006	0.009	0.015	0.023
	[0.001]	[0.001]	[0.002]	[0.002]	[0.011]	[0.012]	[0.017]	[0.019]
IxWeather Sh.	-0.002	-0.000	-0.001	0.002	-0.012	-0.034	-0.017	-0.051
	[0.002]	[0.002]	[0.003]	[0.003]	[0.020]	[0.022]	[0.029]	[0.033]
Weather	0.001	0.001	0.001	0.000	0.015	0.010	0.027**	0.018
shock	[0.001]	[0.001]	[0.002]	[0.002]	[0.011]	[0.010]	[0.013]	[0.013]
IxHealth Sh.	-0.001	-0.000	-0.002	-0.000	0.073*	0.077***	0.026	0.075**
	[0.005]	[0.005]	[0.008]	[0.008]	[0.039]	[0.028]	[0.048]	[0.038]
Health	0.000	-0.001	0.002	-0.001	-0.050**	-0.028*	-0.024	-0.023
shock	[0.002]	[0.002]	[0.003]	[0.003]	[0.024]	[0.016]	[0.027]	[0.024]
Observations	60606	51412	37085	31915	60500	51318	36979	31819

	All	Couple-headed	Landed	Landed and c-headed	All	Couple-headed	Landed	Landed and c-headed
			Δcow				Δchicken	
Isolated	0.014*	0.011	0.025**	0.022*	-0.012	0.008	0.007	0.011
	[0.008]	[0.007]	[0.012]	[0.011]	[0.025]	[0.025]	[0.036]	[0.037]
IxWeather Sh.	-0.020	-0.009	-0.034*	-0.019	-0.054	-0.053	-0.107*	-0.076
	[0.014]	[0.011]	[0.020]	[0.017]	[0.041]	[0.040]	[0.055]	[0.054]
Weather	0.004	-0.001	0.001	-0.004	0.026	0.018	0.009	-0.001
shock	[0.007]	[0.006]	[0.009]	[0.008]	[0.024]	[0.024]	[0.029]	[0.028]
IxHealth Sh.	-0.006	0.010	0.003	0.018	0.055	-0.019	0.167*	0.030
	[0.020]	[0.021]	[0.029]	[0.031]	[0.078]	[0.079]	[0.100]	[0.099]
Health	-0.017	-0.010	-0.020	-0.014	-0.118***	-0.075**	-0.106**	-0.065
shock	[0.011]	[0.011]	[0.015]	[0.015]	[0.038]	[0.035]	[0.045]	[0.043]
Observations	60455	51280	36945	31789	59533	50476	36290	31219
			Δpig				Δrabbit	
Isolated	0.000	0.002	0.005	0.002	-0.001	-0.000	0.002	-0.002
	[0.006]	[0.006]	[0.008]	[0.009]	[0.005]	[0.004]	[0.005]	[0.006]
IxWeather Sh.	-0.009	-0.002	-0.007	0.007	-0.001	-0.004	-0.004	-0.005
	[0.010]	[0.011]	[0.013]	[0.013]	[0.008]	[0.009]	[0.008]	[0.011]
Weather	0.002	-0.000	0.000	-0.005	-0.001	-0.000	0.002	0.000
shock	[0.006]	[0.006]	[0.008]	[0.008]	[0.003]	[0.003]	[0.004]	[0.004]
IxHealth Sh.	0.018	0.001	0.012	0.002	0.000	-0.004	-0.003	0.006
	[0.019]	[0.017]	[0.026]	[0.023]	[0.009]	[0.010]	[0.014]	[0.013]
Health	-0.019**	-0.013*	-0.020*	-0.017*	0.002	0.001	-0.001	-0.002
shock	[0.009]	[0.008]	[0.010]	[0.010]	[0.005]	[0.005]	[0.006]	[0.006]
Observations	60175	51023	36779	31632	60651	51447	37116	31935

Table 9: Effect of weather and health shocks on asset change

Change in:	Common	Blender	Stove	Radio	TV	Fridge	Heater	Music player
					All households			
Isolated	-0.019**	-0.001	-0.002	-0.004	-0.003	-0.011**	-0.001	0.004
	[0.007]	[0.006]	[0.005]	[0.009]	[0.007]	[0.005]	[0.003]	[0.004]
IxHealth Sh.	0.006	-0.002	-0.004	0.001	0.010	0.002	0.002	-0.016***
	[0.011]	[0.009]	[0.008]	[0.014]	[0.011]	[0.007]	[0.004]	[0.006]
Health Shock	-0.023**	-0.014	0.012	-0.020*	-0.017*	-0.015**	-0.004	0.000
	[0.009]	[0.009]	[0.008]	[0.011]	[0.010]	[0.006]	[0.004]	[0.004]
IxWeather Sh.	0.007	0.004	0.000	-0.030	0.003	0.000	-0.009	-0.013
	[0.022]	[0.015]	[0.014]	[0.021]	[0.018]	[0.011]	[0.007]	[0.008]
Weather	0.022***	0.007	0.007	0.028***	0.005	0.005	0.002	0.008***
shock	[0.008]	[0.006]	[0.005]	[0.011]	[0.007]	[0.005]	[0.002]	[0.003]
Observations	42219	42193	42195	42179	42188	42188	42101	42118

OLS estimates pooling the three post-program waves for November 1998, May 1999, November 1999, and November 2000 controlling for 1997 household and village characteristics and region fixed effects. Standard errors clustered at the village level.

Q5: What explains insurance among the connected?

- At the network level, reject the null hp. of full insurance in roughly 20% of the family dynasties (at 90% level), i.e 80% of families are fully insured.
- However, much heterogeneity in degree of insurance.
- We want to see what explain this heterogeneity (various theories, work in progress, suggestions appreciated).

Conclusions

- Connected and isolated households belong to separate risk-sharing groups, despite looking similar.
- Family network members have smoother consumption than isolated households, but 1) no info on aggregate resources for the isolated, and 2) both groups use "assets" (durables, animals, children) in the same way in response to bad shocks.
- Consumption profiles look much smoother than income for both connected and isolated households. Smooth with someone else outside village boundaries? (we are currently looking at transfers from outside the village)
- Possible explanation: the "isolated" have family elsewhere (maybe more geographically disperse because happen to have more volatile incomes?); extended family is "good" at solving info/commitment problems despite the geographic distance.

BACKGROUND WORK

PROGRESA: some details

- Experiment implemented in 7 Mexican States: Guerrero, Hidalgo, Michoacan, Puebla, Queretaro, San Luis Potosi and Veracruz.

- Villages were selected on the basis of:

- Share of illiterate adults;
- share of dwellings without water;
- share of dwellings without drainage systems;
- share of dwellings without electricity;
- average number of occupants per room;
- share of dwellings with floor of dirt;
- share of population working in primary sector.

...plus location, distance between localities, health and school infrastructures.

- Households classified as poor on the basis of:
- Household income (excluding children);
- Household size;
- Durables, Land and Livestock;
- Education;
- Other characteristic of the dwelling.

..plus a village assembly was held to agree on the eligible families.