Policies and Impact: An Analysis of Village-Level Microfinance Institutions

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Objectives and Challenges

- To see how the impact of membership in an MFI on household outcomes depends on
↪ type of MFI
↪ policies followed by MFIs: those associated with actual success vs. those predicted by theory

- Two types of selection problem
↪ participation by households depends on unobservables which are correlated with outcomes
↪ presence of MFI in village depends on unobservables which are correlated with outcomes

Institutional Survey

- Household and institution level surveys in four provinces of Thailand
↪ semi-urban: Chachoengsao and Lopburi
↪ rural: Sisaket and Buriram

  - 161 village-level MFIs across 192 villages

  - Typical loan: size=3500 baht ($140), duration= 1year, interest = 14-19%, no collateral

  - Many MFIs require savings, pledged or optional
↪ median annual size: 500 baht ($20), interest = 8%

Types of MFI

- Production credit groups (PCGs): offer savings services and lend cash
$\hookrightarrow$ members less likely to be poorest, but more likely to be women

- Rice banks: make small emergency loans of rice (consumption-smoothing)
$\hookrightarrow$ relatively high interest rates, members are likely to be poor

- Women's groups: offer array of financial services
$\hookrightarrow$ often linked with training/funding for entrepreneurship

- Buffalo banks: lend out cattle, repayment when calf born
- Success depends on specific policies (Table 1)

TABLE 1. Summary of significant correlations between relevant institution types policies and growth failure.

Correlations with membership growth		Correlations with savings growth		Correlations with lending growth	
Positive	Negative	Positive	Negative	Positive	Negative
Offer lending services	Saving is optional	Require minimum initial deposit	Standard savings accounts	Provide agricultural training	Institution is a buffalo bank
Require minimum initial deposit		Have membership application forms	Time deposit savings	Make cash loans	Make rice loans
		Pledged savings accounts	Only villagers can be members	Amount of savings used as evaluation criteria	
		Provide nonagricultural consultation or advice			
		Provide emergency assistance			

Note: Other policies that were tested include among others: collateral required, guarantors required, payment frequency of six months or less, monitoring frequency of six months or less, borrowers who default can't reborrow, and all borrowers are monitored. These did not have significant relationships with growth.

Household Survey

- 2880 Thai households (15 per village) – stratified, random sample

- household level data (Table 2)

- Village-level data (Tables 3 and 4)

TABLE 2. Summary statistics of relevant Townsend Thai household-level data.

	No. of obs.	Mean or fraction	Stand. Dev.
Impact variables			
Asset growth, 1991–1997	2422	0.607	1.192
Reduced consumption in worst income year, 1992–1997*	2331	0.689	0.463
Became a moneylender customer, 1991–1997*	2725	0.148	0.355
Started a business, 1991–1997*	2874	0.128	0.334
Switched primary occupation, 1991–1997*	2480	0.188	0.391
Demographic variables			
Age of head	2841	51.4	13.6
Age of head squared	2841	2829.5	1466.0
Years of education—Head of household	2822	4.1	2.6
Male head of household	2841	0.77	0.42
Number of adult females in household	2870	1.59	0.85
Number of adult males in household	2870	1.44	0.90
Number of children (<18 years) in household	2870	1.54	1.25
Wealth variables			
Wealth†	2875	1.08	4.04
Wealth squared†	2875	17.51	215.2
Non business wealth†	2875	1.08	4.04
Non business wealth squared†	2875	17.45	215.0
Occupational dummy variables			
Business owner*	2875	0.078	0.269
Inactive no occupation*	2686	0.045	0.207
Rice farmer*	2686	0.481	0.500
Farmer, other crop*	2686	0.191	0.393
Shrimp farmer*	2686	0.034	0.180
Construction*	2686	0.034	0.181
Business/Skilled trade*	2686	0.068	0.251
Professional administrative*	2686	0.036	0.187
General worker, cleaner, janitor*	2686	0.084	0.278
Other*	2686	0.028	0.165
Member/Customer in organization/institution			
Formal financial institution‡	2875	0.176	0.381
Village institution/organization*	2875	0.123	0.328
Agricultural organization (BAAC or Agricultural cooperative)*	2875	0.270	0.444
Moneylender*	2875	0.040	0.196

Notes: * Binary variable.
† Wealth is made up of the value of household assets, business assets, agricultural assets, and land. Nonbusiness wealth excludes business assets. Wealth levels were divided by 1,000,000 to rescale estimates into convenient numbers. The sample excludes the top 1% of households by wealth.
‡ Formal financial institutions include commercial banks, the government savings bank, insurance companies, and finance companies.
All variables are for the year 1990 except for the impact variables (as noted) and the demographic variables, which are 1997.

TABLE 3. Summary statistics of relevant Townsend Thai village-level data.

	No of obs.	Mean or fraction	Stand dev.
Townsend village controls			
Average wealth[†]	2875	1.08	1.57
Average wealth squared[†]	2875	3.63	12.04
Fraction of households with rice farming as primary occupation	2686	0.481	0.201
Average years of schooling–head of household	2822	4.11	0.87
Townsend Thai data institutional presence			
Village has institution[*]	192	0.607	0.488
Village has rice bank[*]	192	0.151	0.358
Village has buffalo bank[*]	192	0.105	0.306
Village has PCG[*]	192	0.083	0.276
Village has women's group	192	0.231	0.421
Institutional data—All village institutions in village have specified policy			
Offer lending services[*]	49	0.837	0.373
Amount of savings used to evaluate loans[*]	51	0.314	0.469
Offer emergency services[*]	46	0.087	0.285
Offer training, advice, or consultation[*]	47	0.234	0.428
Offer savings services[*]	51	0.431	0.500
Offer pledged savings accounts[*]	48	0.229	0.425
Offer traditional (Deposit and withdraw as desired) savings accounts[*]	50	0.040	0.198
Saving is optional to members[*]	50	0.261	0.442
Saving requires minimum initial deposit[*]	49	0.306	0.466
Loans require collateral[*]	39	0.128	0.339
Loans require guarantors[*]	40	0.650	0.483
High loan repayment frequency (More than one payment per year)[*]	37	0.135	0.347
Frequent monitoring of loans (More than once per loan period)[*]	27	0.370	0.492
All borrowers are monitored[*]	26	0.577	0.503

Notes: [*] Binary variable.
[†] Wealth is made up of the value of household assets, business assets, agricultural assets, and land. Levels were divided by 1,000,000 to rescale estimates into convenient numbers. The sample excludes the top 1% of households by wealth. All variables are for the year 1990 except for average years of schooling–head of household. Given the average age of these heads of household (51.4), this 1997 schooling variable is likely quite close to its 1990 counterpart.

TABLE 4. Summary statistics of relevant CDD village-level data.

	No. of obs.	Mean or fraction	Stand. dev.
CDD village controls[‡]			
Municipal location[*]	174	0.017	0.131
Typical travel time to district office (in minutes)	172	38.67	22.82
Typical travel time to market (in minutes)	171	40.56	27.42
Number of households	176	121.7	146.7
Economic status of village relative to other villages in subdistrict (1,2,3)[**]	178	2.06	0.52
Development level of village relative to other villages in the district (1,2,3)[**]	177	2.08	0.518
Fraction of households with piped water supply[*]	176	0.049	0.179
Fraction of households with State-supplied electricity[*]	178	0.076	0.300
Fraction of households with members working in agriculture only	178	0.333	0.360
Fraction of households with members working in multiple occupations	178	0.504	0.367
Fraction of households engaged in cottage industries	178	0.001	0.012
Fraction of rice-farming households using government-promoted varieties	178	0.497	0.398
Households migrate of the village for labor[*]	175	0.943	0.233
Fraction of households with members working outside the subdistrict	173	0.290	0.237
Fraction of households that are members of an agricultural bank/cooperative	178	0.807	0.394
Use of a commercial Bank	178	0.236	0.423
Use of the agricultural Bank (BAAC)	178	0.865	0.343
Level of government aid relative to other villages in district (1,2,3)[**]	177	2.10	0.49
Village has assembly hall[*]	178	0.390	0.488
CDD data institutional presence			
Village has rice bank[*]	177	0.232	0.422
Village has buffalo bank[*]	178	0.146	0.353
Village has PCG[*]	178	0.112	0.316
GIS-predicted institutional presence			
Probability of village having rice bank	192	0.210	0.354
Probability of village having buffalo bank	192	0.134	0.299
Probability of village having PCG	192	0.125	0.281

Notes: [*] Binary variable.
[**] Qualitative variable with 1 = above average, 2 = average, and 3 = below average.
[‡] From over 650 variables, these 19 village control variables were examined (see Section 4).
All variables are for the year 1990.

Impact by Type of Institution

- Difference-in-difference estimator:

$$\Delta y_n = \alpha \mathbf{X}_n + \tau \mathbf{Z}_n + \beta M_n + u_{y,n}$$

where

$$
\begin{aligned}
\Delta y_n &= \text{change in outcome for houshold } n \text{ (1991-1997)} \\
\mathbf{X}_n &= \text{vector of household-specific variables} \\
\mathbf{Z}_n &= \text{vector of village-level contols for household } n \\
M_n &= \begin{cases} 1 & \text{if household is member of particular type of MFI} \\ 0 & \text{otherwise} \end{cases}
\end{aligned}
$$

- Primary Selection Problem:
$\hookrightarrow$ membership may depend on unobservable household characteristics that are correlated with $u_{y,n}$

Two-stage least squares approach

- Use "presence of MFI in 1991" as an instrument for M_n

- First-stage regression:

$$M_n = \gamma \mathbf{X}_n + \boldsymbol{\phi} \mathbf{Z}_n + \delta I_n + u_{m,n}$$

  where

  $$I_n = \begin{cases} 1 & \text{if MFI of particular type is present in village} \\ 0 & \text{otherwise} \end{cases}$$

- Examples: Table 5

TABLE 5. Sample regressions—Becoming a moneylender customer estimates.

	2SLS		Simultaneous MLE	
	Coeff.	Std. Err.	Coeff.	Std. Err.
Equation 1: Becoming a Customer of a Moneylender (1991–1997)				
Age of head	0.0015	0.0044	0.0078	0.0166
Age of head squared	−3.6e-5	4.1e-5	−0.0002	0.0002
Years of education–Head of household	0.0021	0.0040	0.0074	0.0142
Male head of household	−0.0141	0.0200	−0.0450	0.0831
Number of adult females in household	−0.0148	0.0095	−0.0641	0.0419
Number of adult males in household	0.0058	0.0092	0.0201	0.0385
Number of children (<18 years) in household	0.0304	0.0067	0.1206	0.0255
Wealth	1.4e-5	0.0033	−0.0019	0.0174
Wealth squared	−8.6e-7	4.4e-5	3.6e-5	3.1e-4
Member/Customer in organization/Institution				
Formal financial institution	0.0325	0.0234	0.0718	0.0907
Village institution/Organization (Treatment variable)	−0.6338	0.1335	−1.3903	0.1161
Agricultural organization	0.0588	0.0228	0.2021	0.0817
Townsend village controls				
Village average wealth	−0.0661	0.0123	−0.2981	0.0623
Village average wealth squared	0.0050	0.0013	0.0230	0.0079
Fraction of households in rice farming as primary occupation	0.0142	0.0340	0.0046	0.1397
Average years of schooling—Head of household	0.0126	0.0108	−0.0028	0.0420
CDD village controls				
Fraction of households with members working in agriculture only	−0.0896	0.0560	−0.2626	0.2219
Fraction of households in multiple occupations	−0.0900	0.0487	−0.3214	0.1941
Village has assembly hall	−0.0327	0.0177	−0.1311	0.0748
Economic status of village relative to subdistrict	−0.0210	0.0180	−0.1155	0.0701
Level of government aid relative to district	0.0091	0.0194	−0.0099	0.0754
Equation 2: Membership in village institution (1990)				
Age of head	0.0053	0.0031	0.0335	0.0187
Age of head squared	−4.8e-5	2.8e-5	−0.0003	0.0002
Years of education—Head of household	0.0121	0.0032	0.0509	0.0128
Male head of household	−0.0145	0.0166	−0.1466	0.0890
Number of adult females in household	0.0010	0.0082	0.0124	0.0440
Number of adult Males in household	−0.0009	0.0072	0.0058	0.0425
Number of children (<18 years) in household	0.0041	0.0049	0.0083	0.0288
Wealth	−0.0003	0.0033	0.0123	0.0208
Wealth squared	−5.4e-6	4.0e-5	−0.0004	0.0006
Member/Customer in organization/Institution				
Formal financial institution	0.0769	0.0199	0.3640	0.0835
Agricultural organization	0.0946	0.0178	0.5037	0.0776

(*continued*)

TABLE 5. Continued

	2SLS		Simultaneous MLE	
	Coeff.	Std. Err.	Coeff.	Std. Err.
Townsend village controls				
Village average wealth	−0.0049	0.0102	−0.0186	0.0704
Village average wealth squared	−0.0009	0.0011	−0.0087	0.0098
Fraction of households in rice farming as primary occupation	0.0672	0.0233	0.3591	0.1418
Average years of schooling—Head of household	0.0406	0.0093	0.1846	0.0383
CDD village controls				
Fraction of households with members working in agriculture only	−0.0149	0.0394	−0.0758	0.2513
Fraction of households in multiple occupations	0.0201	0.0361	0.0976	0.2320
Village has assembly hall	−0.0165	0.0153	−0.0243	0.0740
Economic status of village relative to subdistrict	0.0373	0.0148	0.2242	0.0787
Level of government aid relative to district	−0.0344	0.0159	−0.2731	0.0860
Instrument/excluded variable–Inst. Presence:				
Village had village institution in 1990 (Townsend data)	0.1288	0.0126	0.7790	0.0891
Rho (Error correlation)	—	—	0.8336	0.0669

Notes: Shading indicates significance at the 5% level. Occupation dummy variables were included in the regressions above, but the results are omitted for the sake of presentation.

Simultaneous Equation Maximum Likelihood Estimation

- Problem: M_n and sometimes y_n are binary variables

- Least squares estimation assumes dependent variables are drawn from continous distribution

- Alternative approach addresses for this

Secondary Selection Problem

- Presence of an institution in village may depend on unobservable village characteristics

- Can predict I_n using geographic (GIS) variables:

$$I_n = \underbrace{\tilde{I}_n}_{\substack{\text{predictable} \\ \text{component}}} + \underbrace{e_n}_{\substack{\text{unpredictable} \\ \text{component}}}$$

- Modified system:

$$
\begin{aligned}
\Delta y_n &= \boldsymbol{\alpha}\mathbf{X}_n + \boldsymbol{\tau}\mathbf{Z}_n + \eta\tilde{I}_n + \beta M_n + \varepsilon_{y,n} \\
M_n &= \gamma\mathbf{X}_n + \boldsymbol{\phi}\mathbf{Z}_n + \delta I_n + u_{m,n} \\
&= \gamma\mathbf{X}_n + \boldsymbol{\phi}\mathbf{Z}_n + \delta\tilde{I}_n + \delta e_n + u_{m,n}
\end{aligned}
$$

$\hookrightarrow$ only the unpredictable component is used as instrument

- Examples: Table 6

TABLE 6. Sample GIS probability regressions—Becoming a moneylender customer estimates.

	2SLS		Simultaneous MLE	
	Coeff.	Std. Err.	Coeff.	Std. Err.
Equation 1: Becoming a Customer of a Moneylender (1991–1997)				
Age of head	−0.0039	0.0061	−0.0133	0.0175
Age of head squared	1.8e-6	5.6e-5	3.0e-5	1.6e-5
Years of education—Head of household	−0.0027	0.0032	−0.0128	0.0141
Male head of household	−0.0095	0.0294	−0.0432	0.0903
Number of adult females in household	−0.0155	0.0085	−0.0747	0.0466
Number of adult males in household	0.0068	0.0118	0.0315	0.0423
Number of children (<18 years) in household	0.0275	0.0062	0.1330	0.0272
Wealth	0.0002	0.0032	−0.0048	0.0191
Wealth squared	2.2e-6	4.4e-5	0.0001	0.0003
Member /Customer in organization/Institution				
Formal financial institution	−0.0254	0.0243	−0.1589	0.0997
Rice bank (Treatment variable)	0.2521	1.4738	1.0811	0.6436
Agricultural organization	−0.0113	0.0313	−0.0386	0.0864
Townsend village controls				
Village average wealth	−0.0533	0.0154	−0.3133	0.0686
Village average wealth squared	0.0045	0.0016	0.0262	0.0086
Fraction of households in rice farming as primary occupation	−0.0580	0.0485	−0.3002	0.1302
Average years of schooling — Head of household	−0.0161	0.0107	−0.0907	0.0442
CDD village controls				
Fraction of households with members working in agriculture only	−0.0501	0.0651	−0.2340	0.2165
Fraction of households in multiple occupations	−0.0818	0.0735	−0.4329	0.2052
Village has assembly hall	−0.0408	0.0155	−0.2116	0.0775
Economic Status of village relative to subdistrict	−0.0286	0.0200	−0.1602	0.0760
Level of government aid relative to district	0.0040	0.0190	0.0291	0.0815
GIS probability of village having rice bank in 1990	−0.0384	0.2317	−0.1044	0.1159
Equation 2: Membership in rice bank (1990)				
Age of head	0.0031	0.0015	0.0653	0.0360
Age of head squared	−2.7e-5	1.3e-5	−0.0006	0.0003
Years of education—Head of household	0.0014	0.0016	−0.0029	0.0264
Male head of household	0.0187	0.0083	0.2465	0.1703
Number of adult females in household	0.0015	0.0041	0.0108	0.0835
Number of adult males in household	−0.0064	0.0038	−0.0869	0.0810
Number of children (<18 years) in household	0.0004	0.0027	0.0129	0.0492
Wealth	−0.0012	0.0006	0.1228	0.2923
Wealth squared	1.8e-5	8.0e-6	−0.1243	0.1215
Member/Customer in organization/Institution				
Formal financial institution	0.0106	0.0091	0.1781	0.1695
Agricultural organization	0.0166	0.0097	0.2719	0.1400

(*continued*)

TABLE 6. Continued

	2SLS		Simultaneous MLE	
	Coeff.	Std. Err.	Coeff.	Std. Err.
Townsend village controls				
Village average wealth	−0.0070	0.0040	−0.3230	0.2162
Village average wealth squared	0.0007	0.0004	0.0296	0.0292
Fraction of households in rice farming as primary occupation	0.0397	0.0104	1.0653	0.3116
Average years of schooling—Head of household	0.0035	0.0031	0.1249	0.0850
CDD village controls				
Fraction of households with members working in agriculture only	−0.0211	0.0234	−0.3840	0.5017
Fraction of households in multiple occupations	−0.0377	0.0190	−0.4557	0.4812
Village has assembly hall	−0.0064	0.0085	0.1204	0.1393
Economic status of village relative to subdistrict	−0.0035	0.0096	−0.0518	0.1243
Level of government aid relative to district	0.0088	0.0100	0.0510	0.1354
Instrument/Excluded variable—Inst. presence				
Village had rice bank in 1990 (CDD Data)	0.1316	0.0147	1.3081	0.1455
Rho (Error correlation)	—	—	−0.5345	0.2922

Notes: Shading indicates significance at the 5% level. Occupation dummy variables were included in the regressions above, but the results are omitted for the sake of presentation.

Results

- Impact of (exogenous variation in) membership on various household oucomes
$\hookrightarrow$ asset growth
$\hookrightarrow$ whether household is forced to reduce consumption or input in bad year
$\hookrightarrow$ starting a business
$\hookrightarrow$ changing jobs
$\hookrightarrow$ becoming a customer of a moneylender

- Results depend on type of institution (Tables 8 and 9)

TABLE 8. Membership impact estimates using Townsend Thai key informant data, by type of institution.

Membership by institution type	Number of members	Asset growth	Reducing consumption or input use in bad year	Starting a business	Changing jobs	Becoming moneylender customer
Any village institution 2SLS	367	0.2175 (0.3998)	0.1693 (0.1993)	0.1238 (0.1187)	0.0408 (0.1529)	−0.6338 (0.1335)
Any village institution Simultaneous MLE	367	1.7037 (0.0678)	0.7098 (0.3493)	−0.0302 (0.3725)	0.0183 (0.4216)	−1.3903 (0.1161)
Rice bank 2SLS	107	−0.3157 (0.3398)	0.2815 (0.1516)	0.1112 (0.1020)	0.0608 (0.1233)	−0.0517 (0.1192)
Rice bank Simultaneous MLE	107	−0.7212 (0.2051)	0.7917 (0.3117)	0.3430 (0.4231)	0.5320 (0.6036)	1.3191 (0.6506)
Buffalo bank 2SLS	13	−1.3584 (1.8823)	2.2932 (1.3029)	0.3474 (0.6836)	1.0805 (0.8022)	1.4900 (1.1835)
Buffalo bank Simultaneous MLE	13	−2.0419 (0.4190)	1.4777 (0.4332)	1.8044[‡] (0.5217)	−1.0918[‡] (0.2281)	−1.1848[‡] (0.2194)
PCG 2SLS	68	0.7178 (0.6119)	0.0058 (0.3099)	0.0236 (0.1866)	−0.2944 (0.2140)	−0.0903 (0.1607)
PCG Simultaneous MLE	68	1.7798 (0.1183)	0.1671 (0.5641)	0.4082 (0.6244)	−0.4873 (0.8814)	−0.6680 (0.5120)
Women's group 2SLS	54	4.9670 (6.0915)	−18.1780 (59.5241)	1.5768 (2.4794)	1.4076 (4.2478)	−4.2552 (3.0400)
Women's group Simultaneous MLE	54	1.8805 (0.1132)	2.0672[‡] (0.1057)	−0.0142 (1.2957)	2.1976 (0.7468)	−1.5887 (0.1285)

Notes: Shading indicates significance at 5% level. [‡] Estimate is significant, but MLE yielded an insignificant error correlation that approached perfect positive or negative correlation. The impact estimate is the coefficient on the membership variable in 1990. "Outcome variables" are the dependent variables in the outcome equation. Impacts are measured from 1991 to 1997. Other independent variables used as controls are head of household characteristics (age; age squared; years of education, sex); household characteristics (numbers of adult males, adult females, and children; total assets, total assets squared; membership/customer of commercial bank, agricultural bank, money lender) and village characteristics (average wealth; average wealth squared; average years education of household heads; fraction of households in rice farming as primary occupation, in multiple occupations, and in agriculture only; presence of a hall for village assembly; economic status relative to other villages in the *tambon*/subdistrict; and the relative level of government assistance that the village receives). In addition, the "asset growth" and reducing consumption" equations contain occupation dummies for the household head. The "becoming moneylender customer" excludes customer of moneylender as a right-hand side regressor. The wealth controls for "starting a business" use non-business wealth. The membership equation contains all of the control variables in the outcome equation as well as a dummy variable for the presence of the institution in the village in 1990 from the Townsend data.

TABLE 9. Membership impact estimates using CDD and GIS-constructed data, by type of institution.

Outcome variable

Membership by institution type	Number of members	Asset growth	Reducing consumption or input use in bad year	Starting a business	Changing jobs	Becoming moneylender customer
Rice bank 2SLS	107	9.2208 (8.4830)	−2.7377 (2.3257)	0.3478 (1.1638)	0.7099 (1.3309)	0.2521 (1.4739)
Rice bank Simultaneous MLE	107	−0.7835 (0.2360)	0.4879 (0.6086)	0.9716 (0.5287)	−0.2536 (1.3686)	1.0811 (0.6436)
Buffalo bank 2SLS	13	3.0852 (7.3281)	1.8697 (3.7320)	0.8660 (2.3787)	2.1604 (3.1634)	−6.1195 (4.9051)
Buffalo bank Simultaneous MLE	13	−1.9190 (0.3897)	1.2465 (0.8267)	−2.0796‡ (0.3993)	−1.2500‡ (0.2378)	−1.2700‡ (0.1968)
PCG 2SLS	68	1.6465 (1.5991)	−1.7041 (0.9500)	−1.5821 (0.6648)	−1.6255 (0.7414)	0.1071 (0.4575)
PCG Simultaneous MLE	68	1.8110 (0.1180)	−0.2749 (0.6786)	−0.5234 (0.7844)	−2.1354 (0.2279)	−0.7299 (0.7838)

Notes: Shading indicates significance at 5% level. ‡ Estimate is significant, but MLE yielded an insignificant error correlation that approached perfect positive or negative correlation. The impact estimate is the coefficient on the membership variable in 1990. "Outcome variables" are the dependent variables in the outcome equation. Impacts are measured from 1991 to 1997. The list of controls variables are those contained in the notes to Table 8. The additional control used is the GIS estimates for the predicted probability of a village having a relevant institution based on its geographic location. The membership equation contains all of the control variables in the outcome equation as well as a dummy variable for the presence of the institution in the village in 1990 from the CDD data.

Impact by Type of Policy

- Same broad framework as before

- Now

$$I_n = \begin{cases} 1 & \text{if some institutions in village follow policy} \\ 0 & \text{if no institutions in village follow policy} \end{cases}$$

- Two sets of policies
↪ growth/failure - related policies (Table 10)
↪ traditional microfinance policies (Table 11)

TABLE 10. Impact estimates by policies of institution (Growth/Failure-related policies).

Outcome variable

Presence of institution with policy	Number of observations	Asset growth	Reducing consumption or input use in bad year	Starting a business	Changing jobs	Becoming money-lender customer
Baseline	2858	0.0296 (0.0521)	0.0914 (0.0227)	0.0161 (0.0153)	0.0050 (0.0186)	−0.0821 (0.0151)
Offer lending services	716	−0.1332 (0.1186)	−0.0041 (0.0550)	−0.0477 (0.0367)	0.0145 (0.0457)	0.0333 (0.0305)
Savings used to evaluate loan applicants	731	−0.0979 (0.0960)	−0.1792 (0.0468)	−0.0209 (0.0322)	−0.0351 (0.0359)	−0.0381 (0.0283)
Offer emergency services	672	−0.0604 (0.1690)	−0.2005 (0.0826)	−0.0996 (0.0447)	−0.0693 (0.0623)	0.0118 (0.0451)
Provide training or advice	674	0.2605 (0.1125)	−0.0993 (0.0555)	−0.0175 (0.0327)	−0.0094 (0.0459)	−0.0087 (0.0319)
Offer saving services	731	0.2546 (0.0996)	−0.1344 (0.0464)	0.0068 (0.0273)	−0.0063 (0.0371)	−0.0268 (0.0289)
Offer pledged savings accounts	688	0.3183 (0.1274)	−0.1155 (0.0672)	0.0670 (0.0427)	0.1305 (0.0539)	−0.0671 (0.0339)
Offer traditional savings accounts	731	−0.1433 (0.2533)	−0.2946 (0.1149)	−0.1058 (0.0890)	−0.2644 (0.1009)	0.0663 (0.0749)
Savings is optional to members	716	−0.0735 (0.1079)	−0.1201 (0.0515)	−0.0450 (0.0316)	−0.0373 (0.0412)	−0.0291 (0.0284)
Savings requires minimum deposit	688	0.1057 (0.1015)	−0.1496 (0.0499)	−0.0286 (0.0307)	−0.0424 (0.0389)	0.0162 (0.0296)

Notes: Light shading indicates significance at 5% level. Dark shading Indicates significance at the 10% level. Impact estimates are the OLS estimate of the coefficient on the dummy variable for all institutions in the village in 1990 having/not having the relevant policy. "Outcome variables" are the dependent variables. The other independent variables are the list of controls variables contained in the notes to Table 8.

TABLE 11. Impact estimates by policies of institutions—(traditional microfinance policies).

Presence of institution with policy	Number of observations	Asset growth	Reducing consumption or input use in bad year	Starting a business	Changing jobs	Becoming moneylender customer
Baseline	2858	0.0296 (0.0521)	0.0194 (0.0227)	0.0161 (0.0153)	0.0050 (0.0186)	−0.0821 (0.0151)
Collateral required	552	0.1230 (0.1728)	0.0776 (0.0744)	−0.0182 (0.0496)	−0.0266 (0.0690)	−0.0348 (0.0487)
Guarantor required	582	0.0318 (0.1176)	0.0268 (0.0533)	0.0044 (0.0352)	0.0464 (0.0458)	−0.0054 (0.0367)
Frequent payments	537	−0.0279 (0.1909)	0.0233 (0.0834)	−0.0237 (0.0629)	0.0105 (0.0738)	0.0150 (0.0548)
Frequent monitoring	375	0.2253 (0.1850)	0.0018 (0.0758)	−0.0071 (0.0510)	−0.0149 (0.0613)	−0.0077 (0.0563)
Everyone monitored	360	−0.1971 (0.1643)	−0.1256 (0.0762)	−0.0024 (0.0465)	0.0103 (0.0570)	−0.0215 (0.0400)

Impact variable

Notes: Light shading indicates significance at 5% level. Dark shading indicates significance at the 10% level. Impact estimates are the OLS estimate of the coefficient on the dummy variable for all institutions in the village in 1990 having/not having the relevant policy. "Outcome variables" are the dependent variables. The other independent variables are the list of controls variables contained in the notes to Table 8.

Broad Conclusions

- Strong positive effects on asset growth of PCGs and women's groups

- Strong negative effects on asset growth of rice and buffalo banks

- Importance of rice and buffalo banks in consumption smoothing

- Importance of women's groups in reducing reliance on moneylenders

- Important role of (pledged) savings policies in consumption smoothing and reducing reliance on moneylenders

- Relative lack of importance of collateral requirements, payment frequency and monitoring