

Financial Frictions

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What constrains financial access in LMICs?

High (potential) returns to **credit** — eg, for small firms in peri-urban Maharashtra, avg monthly return is 9.4% per *month* (Hussam et al 2022)

- yet, even among *formal* private sector firms, credit constraints are prevalent: ~ 30% report being credit constrained (Islam and Rodriguez Meza 2023)

What constrains financial access in LMICs?

Given high costs of credit (25-100+% APRs on microcredit, potentially higher for local lenders; risk to social/physical collateral; debt aversion; etc.), **savings** can be an important route to capital accumulation

- yet, both supply- and demand-side factors make savings difficult (e.g., Dupas and Robinson 2013, Kast et al. 2018)

What constrains financial access in LMICs?

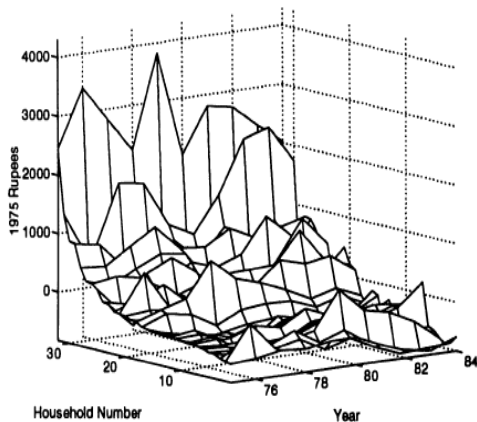
Risk also imposes significant costs on firms and households (Deaton 1992, Chetty and Looney 2006, Bianchi and Bobba 2013, ...)

- neither informal nor formal **insurance** fully buffers households or small firms from risk

Aggregate consequences of financial frictions can be significant (Buera, Kaboski and Shin 2011, Midrigan and Xu 2014)

- Are households and small firms constrained?
- Possible sources of financial frictions, and possible solutions
 - Moral hazard
 - Adverse selection
 - Risk
 - Savings constraints
- Empirically, do these constraints matter?

Income variation, India



(a) Comovement of household incomes (deviation from village average) Aurepalle.

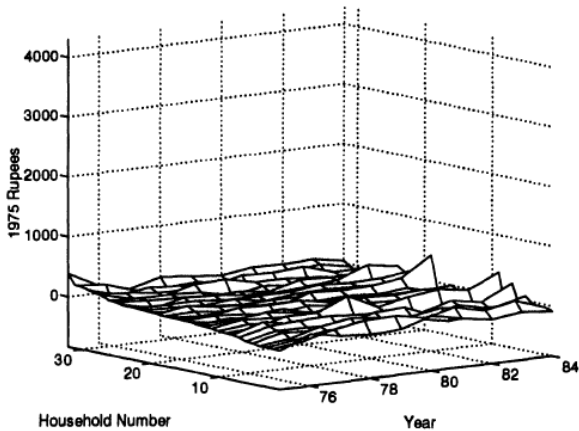
Townsend, 1994

What would we expect under complete markets?

Without financial frictions, what would the corresponding figure for consumption look like?

- risk averse households would smooth year-to-year fluctuations
- via borrowing, saving, (actuarially fair) insurance
- aside: complete markets need not imply no variation across households — even extreme consumption inequality might exist

Is consumption smoothed?



Townsend, 1994

Townsend's conclusion

- “In the ICRISAT villages of southern India, [income] matters statistically. That is, full insurance is rejected in the ICRISAT data. But overall the effect of income on consumption is not large.”
- Year to year income variation may be smoothed well (in terms of food consumption)
- However, larger/more persistent shocks are less well-insured (eg, Gertler and Gruber 2002, many others)

Are small firms constrained?

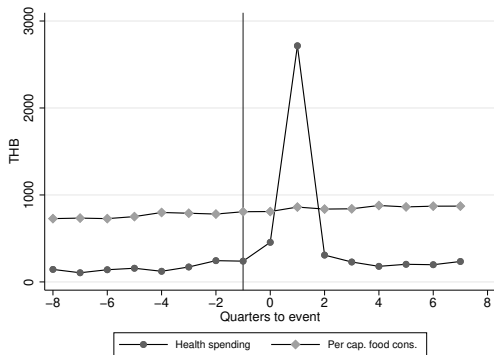
Kinnan, Samphantharak, Townsend, Vera-Cossio 2024

- LMIC firm owners are often un-hedged households, not diversified investors
- do large *household* shocks \Rightarrow effects on business investment? (Yes)
- can *other* local firms indirectly hit by these shocks, via propagation, buffer the effects? (Not fully)

Rural Thailand

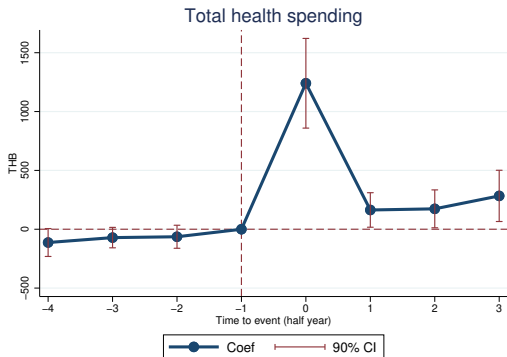
- Townsend Thai monthly data:
 - 14 years of monthly panel data (168 months) following 509 entrepreneurs in 16 villages.
 - Information on household finance, and family enterprises
 - Observe transactions between households in each village
- All sample households have family enterprises
 - Ex: Dairy, aquaculture, agriculture, grocery store

We study health shocks, identified via health spending



Shocks are $2\times$ larger than per capita food consumption, correlated with prevalence of self-reported health symptoms

Effects on consumption



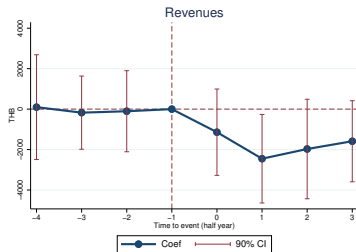
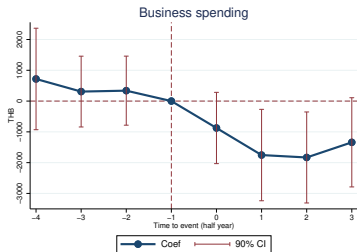
- Health spending rises sharply, relative to control households

Risk-sharing: Shocks increase transfers... somewhat



- Contemporaneous response is $< 50\%$ of spending shock
- Assets fall
- \Rightarrow financial instruments (formal/informal) are present — do they fully buffer the shock?
- What would we expect to see in terms of the production side?
- With no financial frictions, productive decisions should be unaffected: “separation theorem” (eg, Benjamin 1992)

Shocks affect household businesses

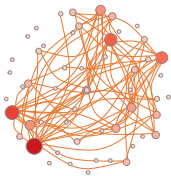


- Hired labor hours also fall
- Effects persist for 2 years post-shock.

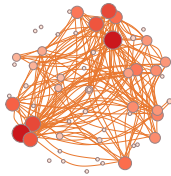
Average direct effect (2-year window): Business spending falls by THB 1757, or 23%.

Do shocks propagate?

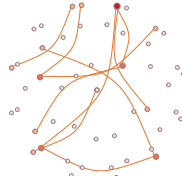
Does this financial incompleteness ripple out to other local firms via B2B networks?



(a) Supply chain

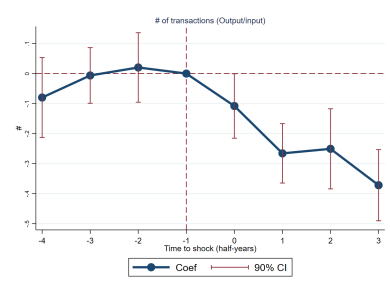


(b) Labor

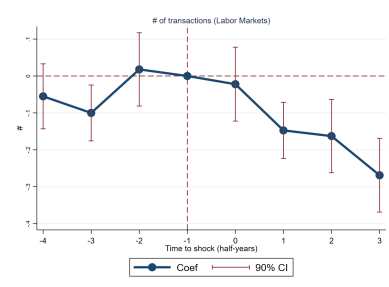


(c) Gift/loan

Propagation through networks: Local transactions



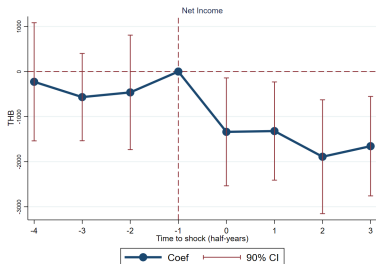
(a) Supply Chain



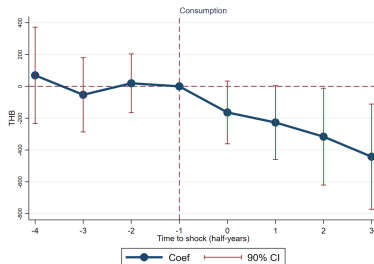
(b) Labor Market

- Sharp declines in local transactions

Propagation through networks: Income and consumption



(a) Income



(b) Consumption

- Gifts do not increase to compensate
- Effects persist for 2 years post-shock

What is behind these results?

These results are not unique: lack of smoothing is seen in income pass-through to business creation/investment, migration, schooling, ...

Why can't these firms' owners rely on

- loans
- savings
- insurance
- or a combination

to buffer their business investment, consumption, etc?

First we'll consider moral hazard, applied to loan contracts

Environment

- Borrower needs capital K for project
- Borrower chooses effort e affecting project's success probability $p(e)$
- Effort is costly and not observable to the lender
 - similar intuition if the borrower can unobservably choose a riskier project
 - similar if the borrower can strategically decide not to repay
- Loan requires repayment R if project succeeds

Problem

- Borrower bears full cost of effort but shares returns with lender; incentives to exert effort are weakened
- Inefficiently low effort \Rightarrow higher default risk \Rightarrow higher R

Collateralized loan

- Borrower pledges collateral $C \geq 0$
- If project fails, borrower transfers C to lender

Borrower payoff

$$U = p(e)(Y - R) - (1 - p(e))C - c(e)$$

(Risk neutral for now)

Effect on incentives

- Higher C raises marginal benefit of effort:

$$\frac{dU}{de} = p'(e)(Y - R + C) - c'(e)$$

- i.e., collateral strengthens effort incentives, reduces R even if lender does not value collateral at C (cf social collateral)

Break-Even Repayment and Collateral

Lender's break-even condition:

$$p(e)R + (1 - p(e))C = K$$

Break-even repayment

$$R = \frac{K - (1 - p(e))C}{p(e)}$$

- Higher collateral ($C \uparrow$) \Rightarrow lower required R

Implications

- Poor borrowers (low C) face high repayment burdens
- If required R is too high, borrower prefers not to exert effort or not to borrow
- \Rightarrow credit rationing or exclusion (cf Aghion and Bolton 1997, Besley and Coate 1995, etc)

Adverse Selection in Credit Markets

Environment

- Borrowers differ in project risk:
 - safe type: success probability p_s
 - risky type: success probability $p_r < p_s$
- Lender does not observe borrowers' type
- No collateral

Problem

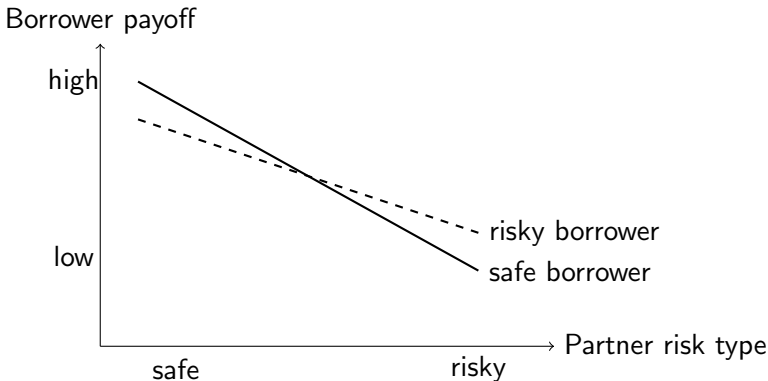
- High interest rates needed to break even when risky types borrow
- Safe borrowers may exit market (lemons problem)
- Credit market may unravel (cf Stiglitz and Weiss 1981)

Joint liability as a possible solution

Joint liability can in principle alleviate credit market frictions:

- alleviates adverse selection if potential group members have information on each other (cf Hussam et al 2022): safer borrowers have higher demand for safe partners \Rightarrow assortative matching \Rightarrow screening costs, default risk are shifted from lender to risky borrowers (Ghatak 2000)
- alleviates moral hazard if group members can monitor/sanction each other: members are part residual claimants of each others' effort \Rightarrow shifts monitoring cost to borrowers from lender (Banerjee et al. 1994)

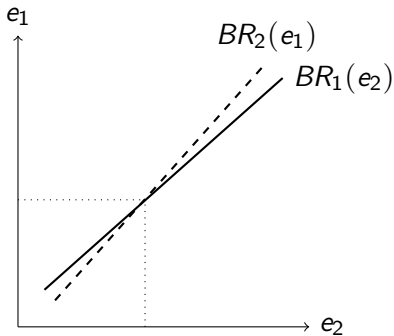
JL and Positive Assortative Matching



- payoff declines as partner becomes riskier; decline is steeper for safe borrowers
- \Rightarrow assortative matching

Joint Liability and the Moral Hazard Problem

Borrower's optimal effort increases in partner's effort



- partner effort reduces probability of joint liability payment \Rightarrow raises marginal return to own effort

Empirical evidence of moral hazard and adverse selection?

How to document MH and AS?

- Ideally, we would vary interest rates and then observe whether borrower “riskiness” (AS) or borrower “effort” (MH) changed
- Yet, the fact that type and effort are difficult to observe is the basis for these frictions in the first place
- Karlan and Zinman (2009) design an experiment to address these issues: “Observing unobservables”

Setting

- South African consumer lender specializing in financing high-risk borrowers
- Randomized $\sim 58,000$ loan offers to existing clients

Experimental arms

- **Offer rate:** interest rate shown in solicitation
- **Contract rate:** actual rate (revealed after acceptance)
- **Dynamic incentive:** surprise promise of future rate reductions for good repayment — after all loan paperwork is finalized

Observing Unobservables

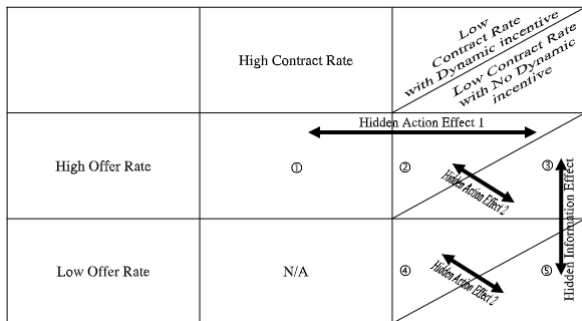


FIGURE 1.—Some basic intuition for our identification strategy.

- Offer rate (2+3 vs 4+5) \Rightarrow selection (who borrows) | repayment burden
- Contract rate (1 vs 2+3) \Rightarrow effort | type (ex ante MH)
- Dynamic incentives (2 v 3, 4 v 5) \Rightarrow repayment (ex post MH)

- Evidence of moral hazard
 - Dynamic incentives improve repayment
- Weaker evidence of adverse selection
 - Limited selection on unobservables via offer rates

Magnitude

- Estimated 13–21% of default due to (ex post) moral hazard

Does this mean that adverse selection is not important?

- Not necessarily: e.g., Castellanos et al (2025) find that 19% of new-to-formal-credit borrowers in Mexico default over 26 mos, largely driven by negative shocks \Rightarrow scope for risk heterogeneity, adverse selection
- different frictions may bind in different markets, for different populations

Does risk matter for (micro)entrepreneurs?

So far: Households and firms do not have universal access to frictionless credit markets

- Adverse selection, moral hazard can drive up rates and limit access
- Risk has played a role in these models by imposing costs on the **lender** \Rightarrow costs on borrowers via credit **supply**
- Does risk also matter directly for borrowers' credit **demand**?

If firms/HHs could perfectly hedge, maybe not — but recall Benjamin (1992)

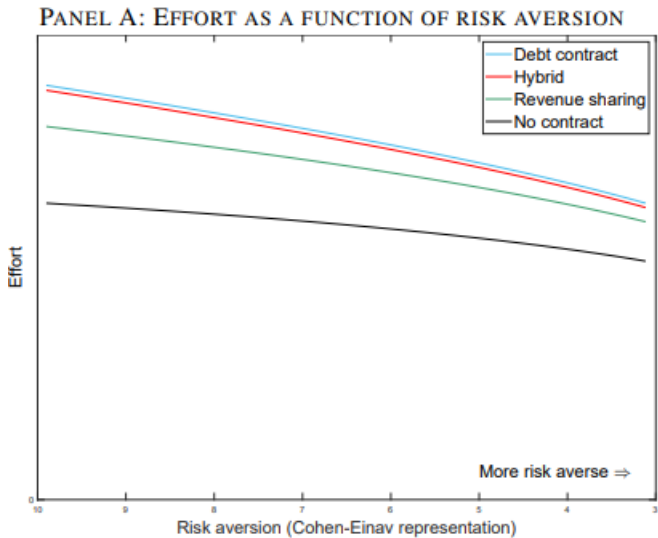
Does risk matter for (micro)entrepreneurs?

How can risk shape credit demand?

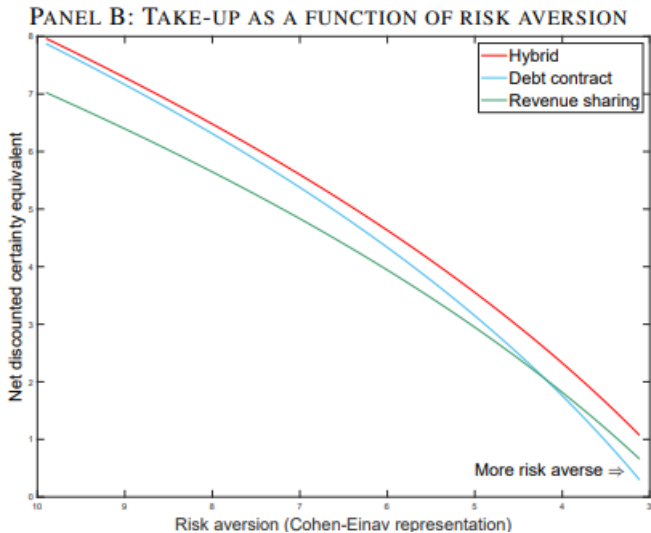
- Standard microcredit: fixed repayments regardless of firm performance (modulo default, which may be costly)
- Creates high downside risk for borrowers
- particularly if the firm has cash flow needs and loan repayment competes for liquidity
- risk averse indivs may choose not to borrow
- Alternative: **performance-contingent repayment** (microequity)
 - advantages: repayments are better matched to cash flows
 - firm receives (partial) insurance
 - downsides: equity contract taxes effort
 - possibility of side-selling

Experimental design

- RCT with microenterprises (“distributors”) in Kenya wishing to finance an asset (bicycle)
- Compare:
 - **Standard loan:** fixed repayment
 - **Microequity:** repayment varies with business performance
 - **Hybrid:** Revenue-sharing, capped at repayment under debt
 - **Index:** Repayments are based on the profits of other distributors in their region
- Same capital amount across treatments
- Financing is offered by “FoodCo”, plus local lender
 - *FoodCo observes revenues/profits via sales data*



Cordaro et al.



Cordaro et al.

Findings

- Very high ROI on asset (88% ITT increase in monthly business profit)
- Microequity contracts:
 - reduce downside risk for borrowers
 - lead to improved business outcomes (profits, survival)
 - Hybrid contract performs best
- Repayment performance remains strong (no increase in side-selling; effort increases)

Mechanisms

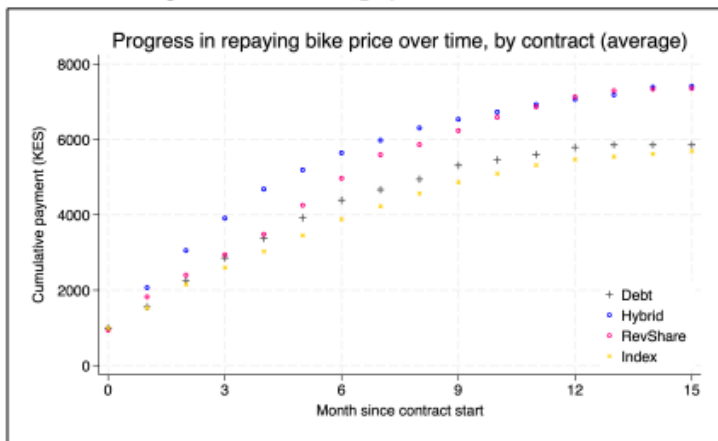
- Better risk-sharing:
 - repayments adjust to shocks
- Improved incentives:
 - less pressure to avoid risk or liquidate early

Implications

- State-contingent finance can improve welfare and efficiency
- Key constraints: screening, monitoring

Repayment across contracts

Figure 2: **Contract payments over time**



What barriers matter for savings?

So far: contracting frictions \Rightarrow barriers to accessing credit

- can entrepreneurs overcome these barriers via self-financing?
(Moll 2014)

Credit market frictions can create strong incentives to save out of liquidity constraints, but saving may be limited by

- self-control problems
- “kin tax”
- lack of commitment devices
- limited social support

Can **group-based saving** improve outcomes?

Experimental design (Chile)

- Field experiment with micro-entrepreneurs
- Random assignment to:
 - **Individual savings account**
 - **Group savings account** (peer meetings, joint participation)
- Same financial incentives across treatments

Key question

- Do social interactions and peer pressure increase savings?

Main Results and Mechanisms

Findings

- Group savings leads to:
 - significantly higher savings balances
 - more frequent deposits
- Effects persist over time

Mechanisms

- Social pressure / accountability
- Regular meetings create commitment
- Peer support reinforces saving behavior

Implications

- Social incentives can substitute for formal commitment devices
- Group-based products can improve financial behavior at low cost
- Parallels with microfinance group lending models

Households and small firms in LMICs are constrained: shocks affect investment, separation theorem fails

- Credit access is limited by asymmetric information on borrower type, effort
- Risk can also reduce demand for credit
- Ability to self-finance is limited by, inter alia, need for commitment
- (Partial) solutions?
 - joint liability?
 - novel contract design?
 - group savings?

Thank you!

Questions? Comments?