Does Social Capital Strengthen Household Resilience in Cambodia? Evidence from Panel Data

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Preliminary Findings

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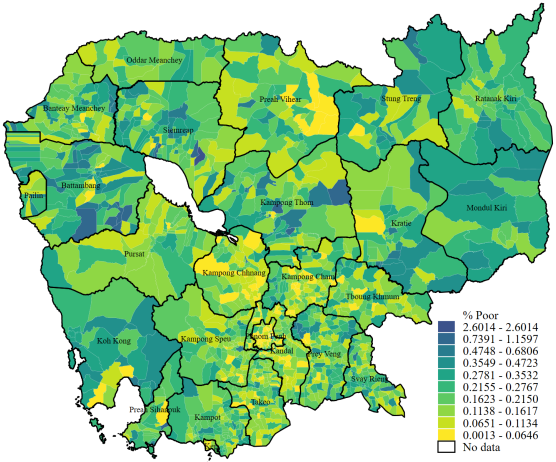
Outline

Background

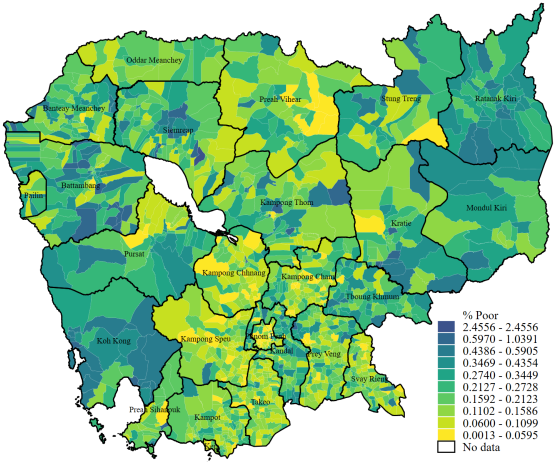
- High exposure to shocks
  - People who escaped poverty remain highly vulnerable to falling back into it when exposed to economic, health or environmental shocks (CDRI 2007; WB 2013, 2022; ADB 2014).
  - In addition to that, a significant portion of Cambodia's labour force in rural areas is engaged in informal and agricultural sectors, both of which often lack adequate social safety nets (UNDP 2012; NSSF 2022).
- Resilience gaps
  - Cambodia's social protection coverage remains limited, leaving many poor and near-poor households *without* a safety net in times of crisis (WB 2022; ILO 2023).
  - High levels of indebtedness, particularly from microfinance loans, weaken the resilience of households, often exacerbating vulnerability when a shock hits (Iskander et al. 2023).

On average, 19.50 % of households in each commune were classified as poor.



Source: National Institute of Statistics of Cambodia

On average, 20.47 % of individuals in each commune were classified as poor.



Source: National Institute of Statistics of Cambodia

Percent of poor households and individuals both in level 1 and 2 by communes

Motivation

- **Main Research Question:** How does social capital affect the resilience of rural households in Cambodia?
  1. What are the structures of social capital and rural livelihoods in Cambodia?
  2. How does social capital affect household income, consumption, and livelihood structures?
  3. How does social capital contribute to the development of the rural household economy?

Why does social capital matter?

- "*the features of social organisation, such as networks, norms, and trust that facilitate coordination and cooperation for mutual benefits*" (Putnam 1993, p.36)
  - It behaves in a form of formal and informal networks, and cognitive components (Putnam 1996; Uphoff 2000).
  - It can be **a horizontal relationship** (existing among equals or near-equals) or **a vertical relationship** (arising from hierarchical or unequal relations due to differences in power or resource bases) (Woolcock 2001; Grootaert and van Bastelaer 2002; Shopeju and Ojukwu 2008; Sen 2012).
  - It is a factor of **socioeconomic development**: people, institutions, and government (Bourdieu 1986; Coleman 1988; North 1990; Krishnamurthy 1999).

Context

- Social capital in Cambodia has declined since the introduction of a monetised economy during **French colonisation**, which emphasised individualism and reduced the sense of solidarity among individuals (Pellini 2005).
- It is because of the impact of the **Khmer Rouge** and **economic liberalisation** in the early 1990s that trust, social solidarity, and norms of reciprocity have declined (UNICEF 1996; Hughes 2001; Ovesen et al. 1996).
  - It is now shaped by emotional, cognitive, and historical factors (Pearson 2011).
  - Misinformation and fake news also possibly lead to low social trust.
- Previous studies found that people believe **no one can be fully trusted**; **taking care of oneself is important for survival** (UNICEF 1996; O'Leary and Meas 2001).

Period	Key Characteristics of Social Capital
Pre–1975 Pre-Khmer Rouge	• Strong kinship, religious, and village-based networks (e.g., pagodas) • Community cooperation through labour exchange and ceremonial support • Informal norms governed by elders and Buddhist values
1975–1979 Khmer Rouge	• Systematic destruction of family and community bonds • Forced collectivisation and elimination of religious and traditional institutions • Breakdown of trust, widespread trauma (e.g., neighbours spied on each other)
1980s–1990s Post-Conflict	• Gradual rebuilding of trust and social ties • Emergence of local NGOs and village self-help groups • Return of religious practices and reformation of village-based institutions • Donor-led social capital interventions in reconstruction efforts
1990s Post-Conflict Recovery	• Proliferation of international NGOs and aid agencies • Start of participatory development and local governance initiatives • Fragile social cohesion, often reliant on external support
2000s Decentralisation and Development	• Boost for local participation • Expansion of community-based organisations and civil society • Stronger ties between state and community via decentralised planning
2010s Technology and Urbanisation	• Shift from traditional networks to online connectivity (social media, mobile apps) • Migration impacts rural social capital; urban informal networks emerge • Youth activism and environmental campaigns gain visibility • Evolving trust patterns in government and NGOs
2020s Resilience and Inequality	• COVID-19 highlighted community resilience through mutual aid • Informal support systems essential amid health and economic shocks • Digital solidarity and informal organising increase • Rising inequality between the poorest and richest, land disputes, and political divides challenge cohesion

Data

- Source: CDRI Moving Out of the Poverty Studies (MOPS) Survey 2008–2020 with 783 households across 5 waves.
  - First conducted in 1993 – a unique dataset studying poverty dynamic (Murshid 1998; McAndrew 1998; Chan and Acharya 2002; World Bank 2006; CDRI 2007, 2012; Fitzgerald and So 2007; Tong 2012; Roth et al. 2017).

Sample	2008	2020	Dropped out	Attrition rate
Krasang	120	86	34	28.33%
Andoung Trach	87	61	26	29.89%
Trapeang Prei	69	54	15	21.74%
Khsach Chi Ros	121	82	39	32.23%
Dang Kdar	130	102	28	21.54%
Kompong Tnaot	123	106	17	13.82%
Prek Kmeng	120	101	19	15.83%
Kanhchor	124	98	26	20.97%
Ba Boang	128	93	35	27.34%
All villages	**1,022**	**783**	**239**	**23.39%**

Our approach

- **Dependent**: Resilience index. We constructed a resilience index using Principal Component Analysis (PCA), based on three key dimensions: *income stability*, *consumption smoothing*, and *coping strategy index*.
- **Independent**: Social capital index (number of trust people that can provide financial support, number of group/association memberships, trust in authorities), shock, access to credit, asset index, and common property resource index.
- **Control variables**: household characteristics, household identifiers, village, year, and village-by-year fixed effects.
- **Models**: Ordinary least squares and fixed-effects models.

Dependent variable

Household income: $YD_{hh,t} = W_{hh,t} + \prod_{hh,t} + T^{inf}_{hh,t}$

Income stability index: $ISI_{hh,t} = \frac{\overline{YD}_{hh,t}}{\sigma(YD_{hh,t})}$

Household consumption: $C_{hh,t} = \alpha_1 \cdot YD_{hh,t} + \alpha_2 \cdot V_{hh,t1}$

Consumption smoothing index: $CSI_{hh,t} = \frac{\overline{C}_{hh,t}}{\sigma(C_{hh,t})}$

Scoping Strategy Index: $SSI_{hh,t} = \sum_{j=1}^{n} F_{j,hh,t}$

We than create an resilience index:

$RI_{hh,t} = \alpha_1 \cdot ISI_{hh,t} + \alpha_2 \cdot CSI_{hh,t} + \alpha_3 \cdot SSI_{hh,t}$

Social capital index variable

- Define dimensions of social capital
  1. Trust (general trust, institutional trust)
  2. Networks (membership in groups, community ties)
  3. Participation (civic engagement, attending meetings, voting)
  4. Benefits from participation (knowledge and skills, gifts)
  5. Access to financial assistance from social networks
- Therefore, we create a social capital index as a model below:

$$SCI_{hh,t} = w_1 \cdot Trust_{hh,t} + w_2 \cdot Networks_{hh,t} + w_3 \cdot Participation_{hh,t} + w_4 \cdot Benefits_{hh,t} + w_5 \cdot Finance_{hh,t}$$

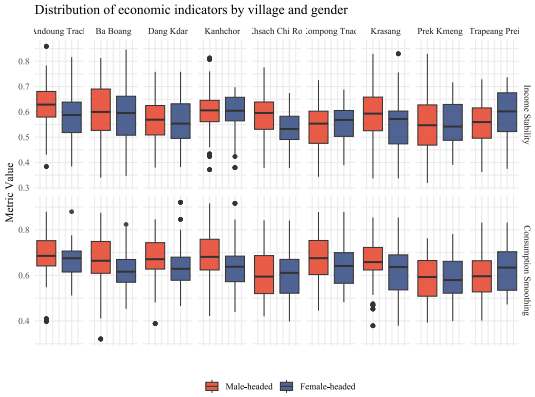
Our main model

$$
\begin{aligned}
RI_{i,t} = \beta_0 &+ \beta_1 SCI_{i,t} + \beta_2 Shock_{i,t} + \beta_3 Credit_{i,t} \\
&+ \beta_4 AI_{i,t} + \beta_5 CPRI_{i,t} + \Gamma \cdot Controls_{i,t} \\
&+ \alpha_v + \gamma_t + \delta_{v,t} + \varepsilon_{i,t}
\end{aligned}
$$

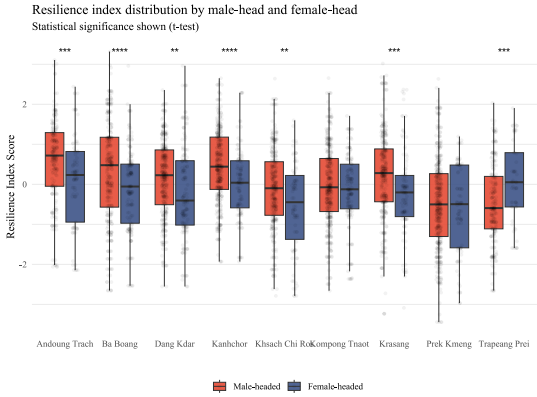
1. Core variables of interest: Social capital, shocks, credit (linear + squared), assets, and CPR.
2. $Controls_{i,t} = [gender\_hh, age\_hh, year\_edu\_hh, hh\_size, dep\_ratio, land\_size]$
3. Fixed effects: α_v (village), γ_t (year), and $\delta_{v,t}$ (village x year).
4. Error term: $\varepsilon_{i,t}$ with household-clustered SEs.
5. Interaction term: $SCI_{it} \times Shock_{it}, SCI_{it} \times Credit_{it}, SCI_{it} \times Access\_Credit_{it}, SCI_{it} \times Income\_Status_{it}, Assset_{it} \times Credit_{it}, Female\_Headed_{it} \times Shock_{it}$

Facts through Graphs

	Mean	SD	Min	Max
Resilience index	0.000	1.090	-3.442	3.318
Consumption smoothing (1000 riels/annual)	0.644	0.105	0.321	0.921
Income stability (1000 riels/annual)	0.576	0.097	0.319	0.859
Scoping index	0.000	1.213	-0.635	7.400
Social capital index	-0.000	1.466	-2.270	5.732
Shock	0.295	0.456	0.000	1.000
Asset index	0.000	1.871	-4.922	5.827
Access to credit	0.540	0.498	0.000	1.000
CPR index	0.000	1.248	-1.452	7.221
Age of head household	53.194	12.565	16.000	95.000
Gender of head household	1.250	0.433	1.000	2.000
Years of education of the household head	3.160	3.031	0.000	18.000
Dependency ratio (%)	34.072	25.685	0.000	100.000
Agricultural land size (ha)	2.058	2.946	0.000	53.500
Real consumption per capita (1000 riels/annual)	180.116	371.414	3.425	19833.404
Real income per capita (1000 riels/annual)	704.670	1532.741	0.000	48265.184
Community/development program participation (%)	14.812	12.256	0.000	65.000
Community/development program beneficiary (%)	29.625	24.512	0.000	130.000
Real agricultural income (1000 riels/annual)	1407.332	2381.384	0.000	54636.477
Real wage (1000 riels/annual)	1767.187	4849.400	0.000	151478.906
Real remittance (1000 riels/annual)	63.101	214.680	0.000	5203.474
Number of trusted people	1.900	1.084	0.000	4.000
Number of associations	1.027	1.100	0.000	11.000
General trust perception	0.507	0.500	0.000	1.000
Real wealth (1000 riels/annual)	5866.093	19039.445	-128189.750	663630.812
Observation	3915			

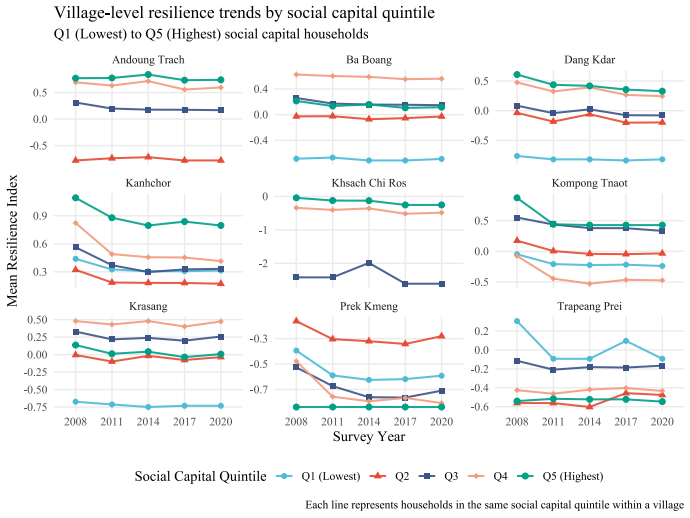


(a)

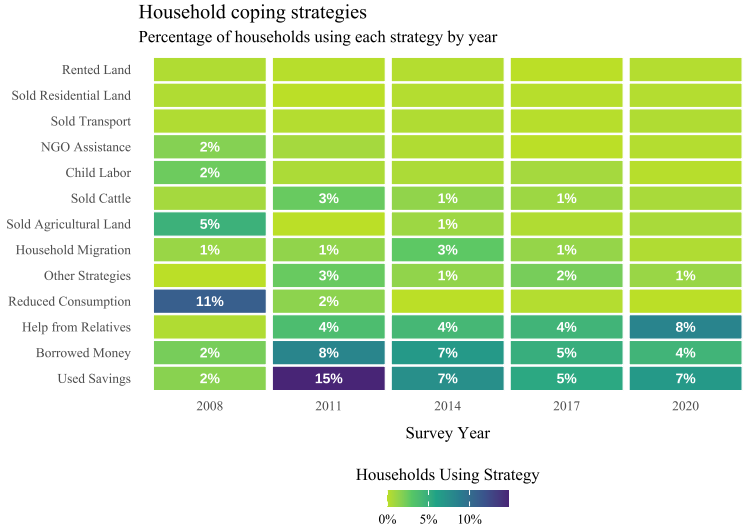


(b)

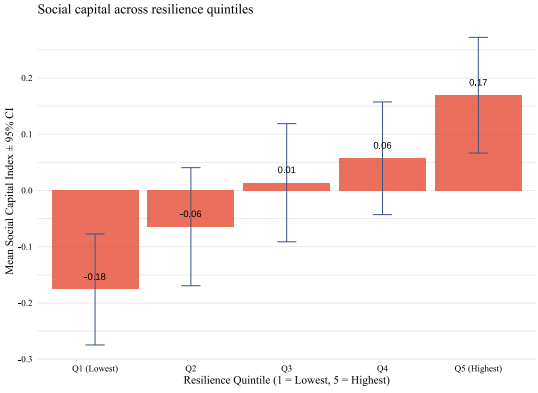
Overall, in almost all villages, male-headed households fare better than female-headed households in terms of income stability, consumption smoothing, and resilience.



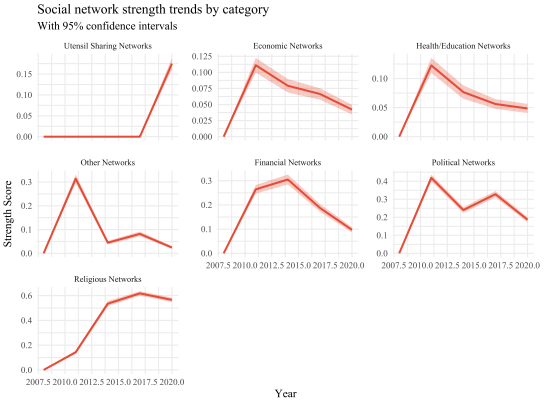
The trend of resilience varies across social capital quintiles. Social capital in quintile 1 showed a low resilience index in only three villages, while social capital in quintile 5 was associated with a low resilience index in two villages.



In all years, the most important coping strategies for dealing with shocks were using savings, borrowing money, and receiving support from relatives.

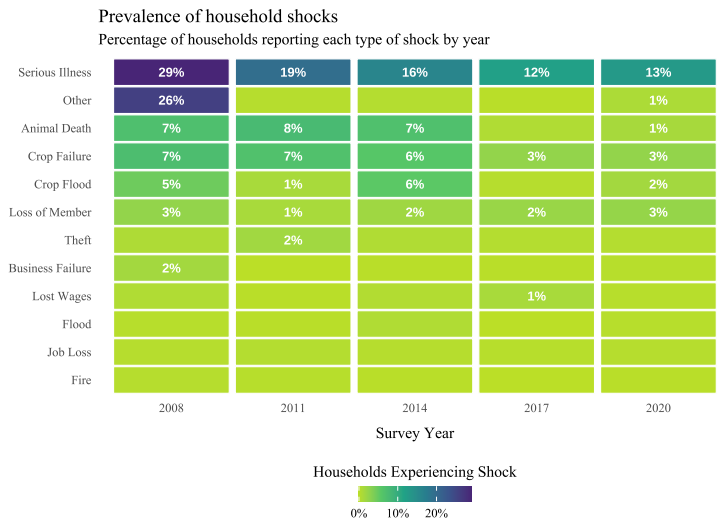


(a)

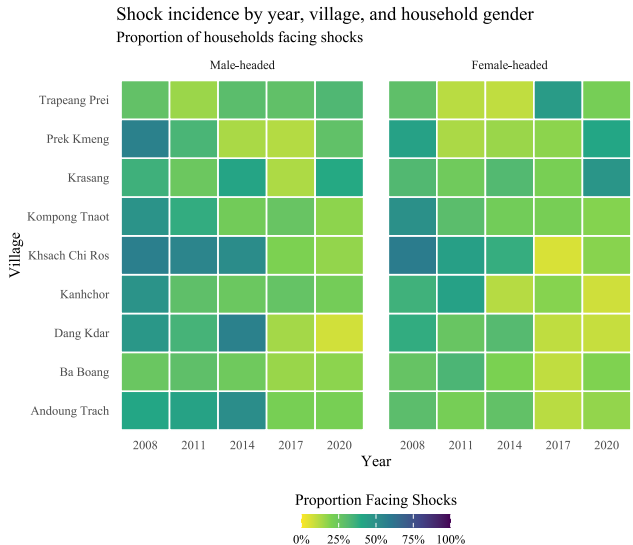


(b)

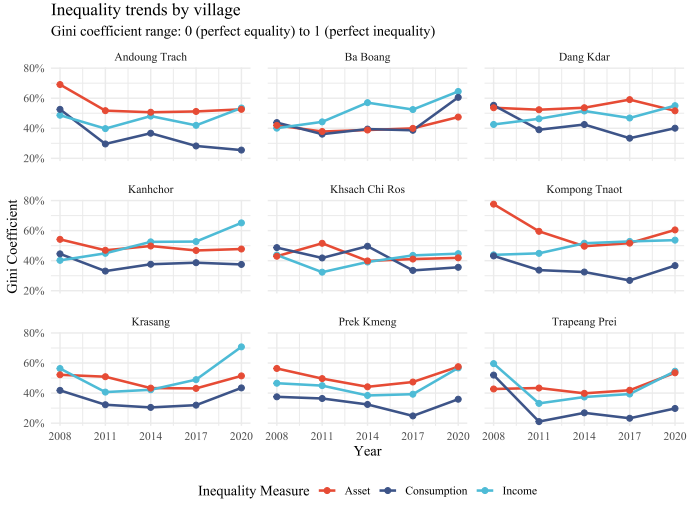
Overall, households with a high level of resilience tend to have stronger social capital networks. However, participation in groups or associations—aside from religious networks—appears to have declined.



Many households experienced shocks such as serious illness, livestock death, crop failure, flooding, and the loss of a household member (often leading to expenses for cultural or funeral events).



In 2008, 2011, and 2014, a larger number of households experienced shocks.

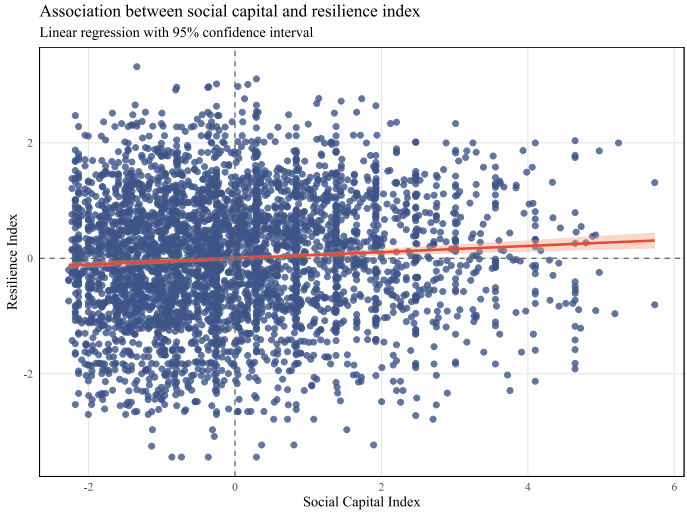


Household asset, consumption, and income inequality by village.

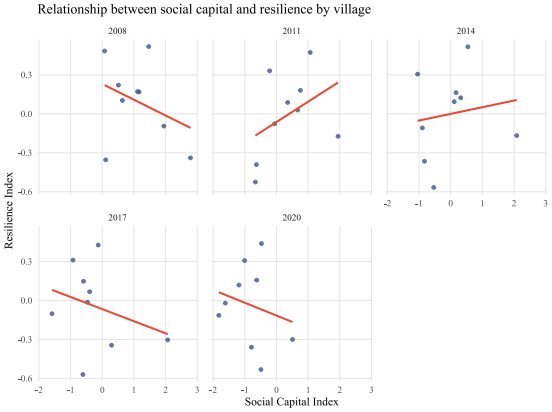
Local leaders consistently earn higher trust than higher government levels

Note: Percentage shows households who answered 'Believe' out of those who gave definite answers ('Believe' or 'Not believe'). Numbers in parentheses show (count believing / total definite responses). 'Don't know' responses are excluded.

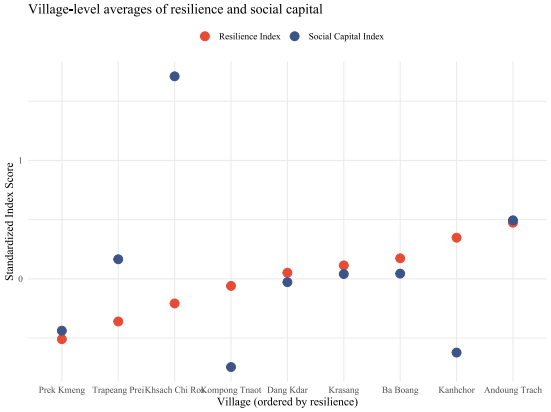
Empirical Results



Social capital has a weak correlation with resilience



(a)



(b)

Social capital and resilience are generally positively related, but the strength of this relationship fluctuates over time. Villages with higher social capital tend to exhibit greater resilience.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Social capital index	0.045***	0.029*	0.025	0.022	0.041**	0.058***	0.062***
	(0.016)	(0.016)	(0.020)	(0.020)	(0.019)	(0.020)	(0.023)
Shock		0.351***	0.322***	0.317***	0.321***	0.327***	0.338***
		(0.041)	(0.050)	(0.050)	(0.047)	(0.048)	(0.051)
ln(Credit)			-0.135***	0.323***	0.369***	0.373***	0.387***
			(0.024)	(0.086)	(0.083)	(0.084)	(0.087)
ln(Credit)^2				-0.044***	-0.044***	-0.046***	-0.048***
				(0.008)	(0.008)	(0.008)	(0.008)
Asset index			0.021	0.025	0.005	-0.003	-0.007
			(0.022)	(0.021)	(0.020)	(0.024)	(0.025)
CPR index			-0.005	-0.007	0.016	0.009	0.006
			(0.019)	(0.019)	(0.017)	(0.017)	(0.021)
Constant	-0.082	-0.184	0.429*	-0.698**	-0.929***	-0.879***	-0.905***
	(0.195)	(0.195)	(0.259)	(0.327)	(0.321)	(0.325)	(0.331)
Village FE	No	No	No	No	Yes	Yes	Yes
Year FE	No	No	No	No	No	Yes	Yes
Village-Year FE	No	No	No	No	No	No	Yes
R-squared	0.03	0.05	0.09	0.11	0.17	0.18	0.19
F-statistic	5.16	14.09	9.93	12.00	11.37	10.25	10.14
Observations	3915	3915	2115	2115	2115	2115	2115

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Controls for household head gender, head age, years of head education, household size, dependency ratio, and land size included in all models. Standard errors clustered at household level.

Resilience index

- Social capital consistently enhances resilience, especially when accounting for fixed effects (Columns 5–7).
- Households with prior shocks show higher resilience, likely due to adaptive learning or coping mechanisms.
- Credit boosts resilience up to a point ($\exp(3.5) \approx (33.11 * 10,000)/4000 =$ USD 82.78), beyond which benefits diminish (potential debt stress).
- Asset/CPR indices: Mostly insignificant, suggesting resilience is driven more by social capital and credit than physical assets.

	Income stability			Consumption smoothing			Scoping strategy		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Social capital index	0.001	0.002	0.003	0.004**	0.006***	0.006***	0.055***	0.010	0.005
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.014)	(0.016)	(0.017)
Shock	0.001	0.002	0.002	0.006	0.007	0.009*	2.040***	2.012***	1.987***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.040)	(0.037)	(0.036)
ln(Credit)	0.023***	0.023***	0.024***	0.029***	0.029***	0.031***	0.082**	0.077*	0.056
	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)	(0.041)	(0.039)	(0.039)
ln(Credit)^2	-0.003***	-0.003***	-0.003***	-0.003***	-0.004***	-0.004***	-0.008**	-0.007**	-0.005
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.004)	(0.003)	(0.003)
Asset index	0.001	-0.000	-0.001	0.001	-0.000	-0.001	-0.048***	0.016	0.024**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.012)	(0.012)	(0.012)
CPR index	0.002	0.001	0.002	0.000	0.000	-0.001	0.006	-0.008	-0.025
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.017)	(0.016)	(0.018)
Constant	0.518***	0.522***	0.519***	0.583***	0.587***	0.585***	-0.788***	-0.821***	-0.757***
	(0.029)	(0.029)	(0.030)	(0.031)	(0.031)	(0.031)	(0.162)	(0.155)	(0.156)
Village FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes	No	No	Yes
Village-Year FE	No	No	Yes	No	No	Yes	No	Yes	Yes
R-squared	0.08	0.08	0.09	0.16	0.16	0.17	0.66	0.69	0.70
F-statistic	3.67	3.90	3.90	5.28	5.08	5.21	233.98	258.63	262.02
Observations	2115	2115	2115	2115	2115	2115	2115	2115	2115

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Controls for household head gender, head age, years of head education, household size, dependency ratio, and land size included in all models. Standard errors clustered at household level.

Resilience dimensions

- Income stability is not significantly explained by the included variables.
- Consumption smoothing is positively influenced by social capital and credit access (non-linearly), with shock experience playing a minor role.
- Scoping strategy is strongly driven by shock experience, with credit access and assets having context-dependent effects.

	(1)	(2)	(3)	(4)	(5)	(6)
Social capital index	0.039*	0.055**	0.055**	0.004	0.016	0.024
	(0.022)	(0.024)	(0.027)	(0.039)	(0.040)	(0.043)
Shocks	0.319***	0.325***	0.332***	0.321***	0.328***	0.337***
	(0.048)	(0.048)	(0.051)	(0.047)	(0.048)	(0.051)
Social capital index × Shock	0.005	0.008	0.018			
	(0.029)	(0.029)	(0.031)			
ln(Credit)	0.369***	0.373***	0.387***	0.365***	0.371***	0.385***
	(0.083)	(0.084)	(0.087)	(0.082)	(0.082)	(0.085)
ln(Credit)^2	-0.044***	-0.046***	-0.048***	-0.044***	-0.046***	-0.048***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Social capital index × ln(Credit)^2				0.001	0.001	0.001
				(0.001)	(0.001)	(0.001)
Asset index	0.005	-0.003	-0.007	0.004	-0.004	-0.008
	(0.020)	(0.024)	(0.025)	(0.020)	(0.024)	(0.025)
CPR index	0.016	0.008	0.005	0.016	0.009	0.005
	(0.017)	(0.017)	(0.021)	(0.017)	(0.017)	(0.021)
Constant	-0.928***	-0.879***	-0.904***	-0.921***	-0.873***	-0.899***
	(0.321)	(0.324)	(0.330)	(0.317)	(0.320)	(0.327)
Village FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes
Village-Year FE	No	No	Yes	No	No	Yes
R-squared	0.17	0.18	0.19	0.18	0.18	0.19
F-statistic	10.50	9.45	9.34	11.66	10.48	10.17
Observations	2115	2115	2115	2115	2115	2115.00

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Controls for household head gender, head age, years of head education, household size, dependency ratio, and land size included in all models. Standard errors clustered at household level.

Social capital and shock

- Social capital does not reduce the negative impact of shocks on resilience. Shocks affect resilience independently of social capital.
- The negative effect of excessive borrowing (captured by ln(*Credit*)) applies equally to all households, regardless of their social ties.

	(1)	(2)	(3)	(4)
Social capital index	0.004**	0.004**	0.000	0.003
	(0.002)	(0.002)	(0.002)	(0.002)
Access to credit	-0.008**	-0.008**	-0.006	-0.009**
	(0.004)	(0.004)	(0.004)	(0.004)
Access to credit × Social capital index	-0.002	-0.002	-0.000	-0.002
	(0.003)	(0.003)	(0.003)	(0.003)
Shock	0.275***	0.275***	0.270***	0.266***
	(0.005)	(0.005)	(0.004)	(0.004)
Asset index	-0.015***	-0.015***	-0.003*	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)
CPR index	0.005***	0.005***	0.002	0.001
	(0.002)	(0.002)	(0.002)	(0.002)
Constant	-0.023	-0.023	-0.058**	-0.060**
	(0.022)	(0.022)	(0.023)	(0.023)
Household FE	Yes	Yes	Yes	Yes
Village FE	No	Yes	Yes	Yes
Year FE	No	No	Yes	Yes
Village-Year FE	No	No	No	Yes
R-squared	0.99	0.99	0.99	1.00
F-statistic	301.33	300.71	336.78	347.92
Observations	3915	3915	3915	3915

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Controls for household head gender, head age, years of head education, household size, dependency ratio, and land size included in all models. Standard errors clustered at household level.

Access to credit and social capital

- Households *without* credit access have higher resilience by default (by 0.008 to 0.009 points.
- Households *with* loan access show lower resilience (-0.008 to -0.009).
- No significant interaction with social capital → Networks don't compensate for credit exclusion.
- Asset ownership alone doesn't guarantee resilience.
- CPRs help resilience, but effects are context-dependent (village-specific).

	(1)	(2)	(3)	(4)
Social capital index	0.019	0.044**	0.057***	0.055**
	(0.019)	(0.018)	(0.020)	(0.023)
Low-income household	-0.161**	-0.271***	-0.271***	-0.286***
	(0.065)	(0.063)	(0.064)	(0.070)
High-income household	0.271***	0.209***	0.237***	0.249***
	(0.072)	(0.067)	(0.069)	(0.072)
Shock	0.318***	0.325***	0.327***	0.335***
	(0.050)	(0.047)	(0.048)	(0.050)
ln(Credit)	0.276***	0.323***	0.329***	0.347***
	(0.084)	(0.082)	(0.082)	(0.085)
$\ln(\text{Credit})^2$	-0.039***	-0.039***	-0.042***	-0.044***
	(0.008)	(0.008)	(0.008)	(0.008)
Asset index	0.026	-0.008	-0.008	-0.011
	(0.023)	(0.022)	(0.025)	(0.026)
CPR index	-0.005	0.019	0.010	0.002
	(0.019)	(0.017)	(0.017)	(0.021)
Constant	-0.764**	-0.756**	-0.706**	-0.575
	(0.328)	(0.344)	(0.350)	(0.374)
Village FE	No	Yes	Yes	Yes
Year FE	No	No	Yes	Yes
Village-Year FE	No	No	No	Yes
R-squared	0.12	0.19	0.19	0.20
F-statistic	11.75	11.08	10.17	6.16
Observations	2115	2115	2115	2115

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Controls for household head gender, head age, years of head education, household size, dependency ratio, and land size included in all models. Standard errors clustered at household level.

Low-income and high-income households

- The low-income household 40% (consumption-based) show significant negative coefficients ranging from -0.161 to -0.286.
- The high-income household 60% show significant positive coefficients ranging from 0.209 to 0.271.

	(1)	(2)	(3)	(4)	(5)	(6)
Social capital index	0.061***	0.074***	0.073***	0.093***	0.120***	0.115***
	(0.021)	(0.023)	(0.026)	(0.033)	(0.035)	(0.037)
Low-income household	-0.225***	-0.221***	-0.240***			
	(0.066)	(0.067)	(0.072)			
Low-income household × Social capital index	-0.043	-0.053	-0.046			
	(0.033)	(0.033)	(0.037)			
High-income household				0.152**	0.185***	0.200***
				(0.068)	(0.070)	(0.073)
High-income household × Social capital index				-0.073*	-0.081**	-0.071*
				(0.037)	(0.037)	(0.039)
Shock	0.326***	0.329***	0.337***	0.320***	0.326***	0.334***
	(0.047)	(0.048)	(0.050)	(0.047)	(0.048)	(0.050)
ln(Credit)	0.352***	0.358***	0.370***	0.350***	0.357***	0.373***
	(0.082)	(0.083)	(0.086)	(0.083)	(0.083)	(0.086)
ln(Credit)^2	-0.043***	-0.045***	-0.047***	-0.041***	-0.044***	-0.046***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Asset index	-0.018	-0.018	-0.022	0.013	0.005	0.002
	(0.022)	(0.025)	(0.026)	(0.021)	(0.024)	(0.026)
CPR index	0.018	0.011	0.002	0.019	0.011	0.008
	(0.017)	(0.017)	(0.021)	(0.017)	(0.017)	(0.021)
Constant	-0.731**	-0.699**	-0.708**	-1.042***	-1.021***	-1.064***
	(0.318)	(0.321)	(0.329)	(0.321)	(0.324)	(0.332)
Household Control						
Year FE	No	Yes	Yes	No	Yes	Yes
Village-Year FE	No	No	Yes	No	No	Yes
R-squared	0.18	0.19	0.19	0.18	0.18	0.19
F-statistic	10.97	10.31	10.11	10.41	9.50	9.23
Observations	2115	2115	2115	2115	2115	2115

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Controls for household head gender, head age, years of head education, household size, dependency ratio, and land size included in all models. Standard errors clustered at household level.

Household income status and social capital

- Poverty hurts resilience. Social capital helps resilience, but for low-income households, social capital doesn't help at all.
- For households in the top 60% by consumption, higher social capital is associated with a reduction in resilience. Social capital comes at a cost—each unit increase reduces resilience by 0.07–0.08 points.

	(1)	(2)	(3)	(4)	(5)	(6)
Social capital index	0.041**	0.058***	0.061***	0.041**	0.058***	0.062***
	(0.019)	(0.020)	(0.023)	(0.019)	(0.020)	(0.023)
Asset index	0.026	0.018	0.012	0.005	-0.003	-0.007
	(0.034)	(0.039)	(0.041)	(0.020)	(0.024)	(0.025)
ln(Credit)^2	-0.040***	-0.043***	-0.045***	-0.044***	-0.046***	-0.048***
	(0.009)	(0.010)	(0.010)	(0.008)	(0.008)	(0.008)
Asset index $\times$ ln(Credit)^2	-0.001	-0.001	-0.001			
	(0.001)	(0.001)	(0.001)			
ln(Credit)	0.336***	0.340***	0.358***	0.369***	0.374***	0.387***
	(0.096)	(0.099)	(0.102)	(0.084)	(0.085)	(0.087)
Female-headed household				-0.258**	-0.260**	-0.263**
				(0.107)	(0.107)	(0.107)
Female-headed household$\times$ Shock				-0.003	-0.002	-0.001
				(0.119)	(0.118)	(0.119)
Shock	0.320***	0.326***	0.337***	0.321***	0.328***	0.338***
	(0.047)	(0.048)	(0.051)	(0.053)	(0.054)	(0.057)
CPR index	0.016	0.009	0.006	0.016	0.009	0.006
	(0.017)	(0.017)	(0.021)	(0.017)	(0.017)	(0.021)
Constant	-0.848**	-0.800**	-0.835**	-1.188***	-1.141***	-1.168***
	(0.347)	(0.351)	(0.358)	(0.303)	(0.306)	(0.313)
Village FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes
Village-Year FE	No	No	Yes	No	No	Yes
R-squared	0.17	0.18	0.19	0.17	0.18	0.19
F-statistic	10.70	9.60	9.50	10.49	9.46	9.36
Observations	2115	2115	2115	2115	2115	2115.00

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Controls for household head gender, head age, years of head education, household size, dependency ratio, and land size included in all models. Standard errors clustered at household level.

Female-headed household and shock

- The interaction term Asset Index $*$ ln$(Credit)^2$ is statistically insignificant across all models.
- Female-headed households demonstrate a statistically significant resilience deficit of 0.26-0.27 points compared to male-headed households, after controlling for all other factors (assets, credit, shocks, etc.).
- No gender difference in shock impact (insignificant interaction term).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Resilience index	0.077***	0.050*	0.040	0.036	0.059**	0.070***	0.065***
	(0.027)	(0.027)	(0.032)	(0.033)	(0.027)	(0.025)	(0.024)
Shock		0.431***	0.396***	0.396***	0.297***	0.167***	0.108**
		(0.054)	(0.066)	(0.066)	(0.060)	(0.055)	(0.052)
ln(Credit)			-0.096***	-0.013	-0.051	-0.127	-0.049
			(0.024)	(0.111)	(0.084)	(0.079)	(0.082)
$\ln(\text{Credit})^2$				-0.008	-0.006	0.014*	0.006
				(0.011)	(0.008)	(0.008)	(0.008)
Asset index			-0.073***	-0.072***	-0.083***	0.084***	0.074***
			(0.022)	(0.022)	(0.020)	(0.020)	(0.020)
CPR index			0.240***	0.240***	0.129***	0.122***	0.056*
			(0.032)	(0.032)	(0.027)	(0.026)	(0.032)
Constant	0.654***	0.516***	0.644***	0.439	0.785***	0.438*	0.266
	(0.173)	(0.172)	(0.240)	(0.359)	(0.285)	(0.264)	(0.264)
Village FE	No	No	No	No	Yes	Yes	Yes
Year FE	No	No	No	No	No	Yes	Yes
Village-Year FE	No	No	No	No	No	No	Yes
R-squared	0.08	0.10	0.15	0.15	0.31	0.43	0.51
F-statistic	33.22	42.33	25.41	23.24	16.03	7.22	5.16
Observations	3915	3915	2115	2115	2115	2115	2115

Note: Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Controls for household head gender, head age, years of head education, household size, dependency ratio, and land size included in all models. Standard errors clustered at household level.

Social capital index

- Suggests resilient households maintain/develop stronger social networks.
- Asset paradox: Asset can maintenance burdens social ties but it also enable social participation.
- Shared resources may substitute for social capital at low levels.
- Directionality unclear – does resilience enable social capital or vice versa? Social Capital → Resilience vs. Resilience → Social Capital

Discussion

- So, does social capital strengthen household resilience?
  - Yes—but conditionally: Its benefits accrue primarily to those already resilient/non-poor.
  - Shock-exposed households exhibit higher resilience, likely due to adaptive learning and external aid. Shocks also boost social capital, likely through forced cooperation.
  - Credit: Inverted U-shape in resilience models and no interaction with assets—overborrowing harms all households equally.
- Endogeneity concerns:
  - **Reverse causality**: Resilient households may actively build social capital (rather than social capital causing resilience).
  - **Omitted variables**: Unobserved factors (e.g., leadership, cultural norms) could drive both social capital and resilience.
- Measurement issue: We do not have qualitative data at the household level to validate the analysis.

Key takeaways

- Social capital is a privileged good to build resilience for non-poor households or other words, non-poor households build resilience through social capital, but poor households derive no resilience gains from networks.
- Poverty is the primary resilience barrier: Low-income households face a 0.54-point resilience gap (vs. rich) — larger than any other factor's impact.
- CPRs boost low-income households' social capital (+0.24), but effects fade with controls.
- Women-led households have 0.26-point lower social capital, independent of shocks.

Key takeaways

- Social capital's benefits are non-linear:
  - For the high-income household: Excessive networks hurt resilience (0.08, likely due to elite capture).
  - For the low-income household: Networks fail to compensate for material lack.

Next steps

- We will research to identify key potential solutions (both in formal and informal approaches) addressing resilience gaps between low-income and high-income households in rural areas.
- Rethinking development models to include a sense of community and mutual aid is essential.
- Importantly, we are seeking to collect your inputs.

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