Does the quality of the land records infrastructure affect credit access of households?

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16 May, 2024

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Structure of the presentation

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2. About this study
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Setting the context

- Three unusual features household portfolios in developing countries - illustrating through India (Ramadorai 2018):
  - Real estate assets have a significant presence in household portfolios (77 per cent);
  - A significant portion their debt is unsecured (56 per cent);
  - Mortgage loans are a small part of total liabilities (23 per cent)

- Typically where there is information asymmetry about creditworthiness - greater reliance on collateral (Stiglitz et al. 1990)

- The Indian paradox: *despite having a high percentage of real-estate assets, unsecured debt is high and real estate assets are under-utilised as collateral*
  - income-based lending rather than mortgaged-based lending

▶ Literature suggests that the land records infrastructure is one of the potential reasons for this (Krishnan et al. 2016, Narayanan et al. 2019, Rajan et al. 2009, Mohanty et al. 2015, Deininger and Goyal, 2010)

▶ How land records infrastructure may affect mortgage-based credit access:
  ▶ information asymmetries
  ▶ screening and enforcement costs

The question

- ▶ Our question: Does the quality of the land records infrastructure affect the household's access to credit in India?

- ▶ Why this is important: Literature acknowledges that
    - ▶ access to credit enables poorer households to smooth consumption through shocks to their income.
    - ▶ households use credit to improve their economic status.
    - ▶ financial firms deliver more credit when there is lower information asymmetry about household landholdings.

- ▶ If access to credit has links to the quality of the land records infrastructure, it supports the case for policy efforts to improve the land records infrastructure:
  - in the manner being done **or**
  - presents a case for re-thinking the current approach and strategy

The design

- Seek to empirically examine the link between the quality of the land records infrastructure and household credit access.

- Research design: Exploit the heterogeneity of the quality of the land records infrastructure across Indian states.

- Use two novel datasets in the analysis:
    1. NCAER's Land Records Services Index (LRSI) 2019
    2. CMIE's Consumer Pyramids Household Survey (CPHS) 2014-2019

- **LRSI**: index by NCAER in 2019, for 33 states.
  What is available are four component measures:
  (1) textual record, (2) spatial record, (3) registration, (4) quality of record
  and (5) aggregate score between 0-100
- **Consumer Pyramids**: survey-based, national, 175000 households surveyed thrice a year capturing socio-geographic-economic features including access to financial products, 2014–2023. What is available includes:
  1. households that have borrowings
  2. sources of borrowings

  Formal – bank, micro-finance institutions, non-banking finance companies, self-help group, credit cards

  Informal – friends&family, employer, money lender, chit funds, shops, religious institutions and similar.

  3. households holding property / earning rent from property
  4. purpose of borrowing
  5. location of the household (state and rural/urban)

Our approach

▶ Propose a measure of access to credit: fraction of households in a state that are "borrower" households

▶ Compute three variables in access to credit: (1) Fraction of households in the state with any borrowing; (2) Fraction of households with borrowing from formal sources; (3) Fraction of households with borrowings from informal sources.

▶ Test the strength of the correlation between the state-level borrower households and state LRSI scores
- difference between sets of states with opposite LRSI values (low and high)

▶ Method: Correlations, OLS

Our hypotheses

H1 : Better land records infrastructure (higher LRSI) enables higher access to credit (more households with borrowing).

H2 : Better land records infrastructure (higher LRSI) enables higher access to formal sector credit (households with borrowing from formal sources).

- ▶ What is new:
    1. quantitative measures for land record infrastructure;
    2. frequent observations of household credit access (three times a year) – information is current;
    3. both measures capture state variation.

  Potentially, the first multi-state *empirical* analysis linking credit access and land records in India.

- ▶ What it is not: **Not** a causal analysis
    1. no direct observation of actions / choices of lenders
       – can only use household balancesheets as proxies for access to credit
    2. only one observation for land record infrastructure at present
       – not immediately possible to capture how land records infrastructure has changed across states across time - the COVID-19 pandemic

Findings

Is there a link?

State	LRSI score	Borrower households (% of total households)	
Low LRSI			
Jammu&Kashmir	4.3	91.67	
Sikkim	5.9	17.71	
Chandigarh	6.0	51.10	
Kerala	10.7	56.00	
Assam	19.4	53.67	
Delhi	22.1	37.31	
Mean	11.40	52.24	
High LRSI			
Maharashtra	65.3	77.91	
Odisha	67.5	57.55	
Madhya Pradesh	74.9	74.02	
Mean	66.30	69.83	

Is there a link?

State	LRSI score	Borrower households (% of total households)		
		Any borrowing	Only formal	Only informal
Low LRSI				
Jammu&Kashmir	4.3	91.67	1.10	60.57
Sikkim	5.9	17.71	14.49	1.97
Chandigarh	6.0	51.10	28.51	10.31
Kerala	10.7	56.00	38.26	4.52
Assam	19.4	53.67	16.32	28.63
Delhi	22.1	37.31	24.14	6.92
Mean	11.40	51.24	20.47	18.82
High LRSI				
Maharashtra	65.3	77.91	5.80	52.19
Odisha	67.5	57.55	14.00	25.71
Madhya Pradesh	74.9	74.02	11.03	38.95
Mean	66.30	69.83	10.28	38.95

Estimated correlations

Prob. of being a borrower HH $= \alpha + \beta_1 \text{Land record infrastructure score}_i + \vec{\beta}\vec{X}_i + \epsilon_i$

$\vec{X}$ including HH features like *income*, *demographic composition*, *occupation* and *land ownership* as control variables.

	All	Formal	Informal	R	U
LRSI score	**0.011*****	**-0.013*****	**0.007*****	**0.207*****	**0.012*****
Registration	**0.033*****	**-0.040*****	**0.024*****	-	-
Textual records	**0.007***	**-0.023*****	**0.014*****	-	-
Spatial records	**0.056*****	**-0.051*****	**0.016*****	-	-
Quality of records	**0.017*****	**-0.030*****	**0.025*****	-	-

*p<0.1; **p<0.05; ***p<0.01

What might potentially be driving more informal borrowings?

Supply side constraints? Physical presence of formal financial institutions

▶ The distance from bank branches is a physical barrier to access to finance (Shankar 2013; Barajas et al. 2020)
  - RBI policy to increase branch presence in unbanked areas
  - *bank branch presence as a proxy for supply-side constraints*

▶ **Hypothesis**: In states where there is a lower presence of formal financial institutions, there is a higher fraction of households borrowing from informal sources.

- ▶ The data:
  - ▶ CMIE's Consumer Pyramids Household Survey 2019
    - borrowing by HH
    - weighted number of households
  - ▶ RBI Database on Indian Economy
    - State-wise bank branch statistics (absolute numbers) - 2019
    - Number of branches of scheduled commercial banks and non-scheduled commercial banks
  - ▶ Calculate the number of branches per capita households in a state rather than relying on absolute numbers
    - *proxy for distance to bank branches*
- ▶ Limitations: The present analysis does not examine all types of formal financial institutions presence

Supply side constraints: State-wise presence of financial institutions, 2019

State	Financial institutions (No. of branches)	
	Absolute	Per capita
Low LRSI		
Jammu &Kashmir	1741	0.00065
Sikkim	163	0.00107
Chandigarh	393	0.00139
Kerala	6592	0.00072
Assam	2848	0.00036
Delhi	3618	0.00084
Mean	2559	0.00084
High LRSI		
Maharashtra	13133	0.00044
Odisha	5117	0.00044
Madhya Pradesh	7047	0.00036
Mean	8432	0.00042

Source: Database of Indian Economy, RBI

- ▶ Informal lending provides faster credit with lower transaction costs because Indian HH borrow small size loans for unplanned purposes (Mowl 2013; Das 2015)

- ▶ **Hypothesis**: In states with better land records but where borrowing is more from informal sources, HH's borrow smaller loans for unplanned purposes
  - if this is true then despite digitisation, perhaps there are high transaction costs in accessing formal finance and therefore HH continue to borrow from informal sources

► The data:
  ► CMIE's Consumer Pyramids Household Survey 2019
  ► What households borrow for (11 purposes of borrowing) -
    categorisation into two buckets:
      1. Capital purposes: housing, education, consumer durables,
         business, investment, debt repayment, vehicles
         - *proxy for planned and larger ticket-size loans*
      2. Non-capital: medical expenditure, consumption
         expenditure, wedding
         - *proxy for un-planned and smaller ticket-size loans*
  ► Calculated (i) the fraction of borrower HH that borrow for
    "capital" and (ii) the fraction of borrower HH that borrow for
    "non-capital" purposes in each state

Demand side constraints: Purpose of borrowing by households

	Capital	Non-capital
		(As % of borrower households)
Low LRSI		
Jammu&Kashmir	1.47	57.47
Sikkim	13.60	3.94
Chandigarh	29.33	16.45
Kerala	44.11	8.66
Assam	16.01	29.82
Delhi	25.31	9.64
Mean	21.72	21.00
High LRSI		
Maharashtra	6.44	50.62
Odisha	25.42	23.76
Madhya Pradesh	20.34	26.02
Mean	17.40	33.47

Takeaways

- There appears to be evidence of a link between land record infrastructure and access to credit.
- Some novel observations:
  - Borrowing from informal sources has the strongest statistical correlations with the quality of the land records infrastructure
  - Among components, *spatial records* show consistently significant correlations
  - Among components, *textual records* consistently does not appear to have significant correlations.
  - There is a stronger linkage in rural regions
  - Indications that digitisation of land records has not solved the :
    - transaction costs challenge
    - information asymmetry

Takeaways

- Some indication that there may be supply-side contraints: bank branch presence could possibly affect access to formal credit

- Some indication that land records infrastructure matters in combination with property ownership and agriculture as an occupation.

Thank you
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