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

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Structure of the presentation

1. Setting the context
2. About this study
   - The question
   - The data and design
3. Findings
4. Takeaways
5. Limitations and future work on the paper

Setting the context

- Three unusual features in Indian household portfolios that set them apart from their counterparts in other countries (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*
- 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).
- How land records infrastructure may affect credit access:
  - Information asymmetries;
  - Transaction 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 / availability of credit has links to the quality of the land records infrastructure, it support the case for policy efforts to improve the land records infrastructure.

The design

- Seek to empirically examine the link between the quality of land records 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

About this study - the data

- **LRSI**: Survey 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 of land record infrastructure
- **Consumer Pyramids**: Survey-based, national, 175000 households surveyed thrice a year capturing socio-geographic-economic features including access to financial products, 2014–2019. 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. location of the household (state and rural/urban)

- Hypotheses:
  1. **H1**: Better land records infrastructure (higher LRSI) enables higher access to credit (more households with borrowing).
  2. **H2**: Better land records infrastructure (higher LRSI) enables higher access to formal sector credit (households with borrowing from formal sources).

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
- Method: Correlations, OLS

- **Not** a causal analysis
- 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.

- Downsides

  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
     – cannot capture how land records infrastructure has changed across states across time.

Findings

Is there a link?

	LRSI score	Borrower households (% of total households)			
		Any borrowing	Both	Only formal	Only informal
Low LRSI					
Jammu&Kashmir	4.3	68.01	67.88	0.03	0.10
Sikkim	5.9	15.37	14.47	0.08	0.01
Chandigarh	6.0	41.01	40.11	0.06	0.03
Kerala	10.7	53.40	53.3	0.08	0.02
Assam	19.4	42.11	42.01	0.04	0.06
Delhi	22.1	27.94	27.84	0.08	0.02
High LRSI					
West Bengal	61.8	81.00	69.63	2.81	8.56
Tamil Nadu	63.0	70.34	57.24	3.57	9.53
Chhattisgarh	65.3	60.80	50.24	1.29	9.27
Maharashtra	65.3	69.39	57.46	1.86	10.09
Odisha	67.5	40.95	30.05	5.11	5.79
Madhya Pradesh	74.9	54.14	41.7	2.86	9.58

Estimated correlations

$$\text{Fraction of borrower households} = \alpha + \beta_1 \text{Land record infrastructure score}_i + \gamma \vec{X}_i + \epsilon_i$$

These are estimates from a model with $\vec{X}$ include state *GDP* and *Property ownership* as control variables

	All	Formal	Informal	Rural	Urban
LRSI score	**0.38***	0.10	**0.51****	**0.44***	**0.37**$^{-}$
Registration	1.15	0.17	**1.45***	1.11	**1.44**$^{-}$
Textual records	1.16	-0.33	1.44	1.68	1.08
Spatial records	**1.55***	-0.20	**2.16****	**1.50**$^{-}$	**1.40**$^{-}$
Quality of records	0.65	-0.47	**1.06***	0.75	0.60

Takeaways

- There appears to be evidence of a link between land record infrastructure and access to credit.
- Some novel observations:
  1. Informal borrower households appear to have the strongest statistical correlations with the quality of the land records infrastructure
  2. Among components, *spatial records* show consistently significant correlations
  3. Among components, *textual records* consistently does not appear to have significant correlations.
  4. Does not appear to be much difference between correlation effects in urban and rural regions.

Limitations and future work on the paper

1. **Limitation:** Present analysis is an aggregate at the level of the state.
   Future work: Research design to study this at the level of the household. This can exploit the richness of the variations across households in terms of incomes (including from renting out property), expenses (including on rentals) borrowings (including monthly changes in borrowings, reasons for borrowings including mortgage, sources of borrowings), land holding, etc.
2. **Limitation:** Present analysis has no deep understanding for why different components have different importance.
   Future work: Understand the differences across the different components and attempt to incorporate it into the research design.
3. **Limitation:** Present analysis does not illustrate the link between credit channels and information asymmetry addressed by better land record administration.
   Future work: Incorporate the presence of the formal financial firms into the research design

Thank you

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