

The relationship dilemma: Organizational culture and
the adoption of credit scoring technology in Indian
Banking

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Summary of paper - 1

- Studies adoption of credit scoring technology two different classes of banks (PSB and NPB)
- Finds that PSB's and NPB adopt credit scoring equally for new borrowers. However, PSB's have much lower levels of use of credit scoring for existing (relationship) clients.
- Old private banks (OPB) show similar behaviour to PSB's, thus state ownership does not appear to be the driving factor in this differential behaviour.
- The lack of adoption of credit scoring is costly – loans where banks do not enquire about clients (relationship or non-relationship) have much higher default rates.



Summary of paper - 2

- Paper conjectures that organizational culture of PSB's and OPB's leads them to adopt credit scoring for existing clients slowly.
- Some time series evidence that this is reducing for PSB's and OPB's – the paper posits that higher competition leads to reduction in value reducing behaviour.
- Interesting conundrum – Fast and slow adoption of credit scoring at the same time by the same set of institutions.
- Adds to the literature on adoption of credit scoring adoption. There – credit scoring and its wide availability result in reduced relationship lending. Here, relationship lending actually hampers growth of credit scoring – a novel result.



Comments

- Alternative explanations
 - Zombie Lending, Geography of borrower and bank
- Empirical methodology
 - Non-informational effect of enquiring – a loan where the bank enquires and the agency has no information has lower default risk, relative to a loan where the bank does not enquire and the agency has no information.
 - Lack of Bank's internal Scores
- Data Issues



Alternative theoretical explanations - 1

- Zombie lending (courtesy: Lin Yupeng)
 - Relationship borrowers are more likely to be zombies.
 - Loan officers do not enquire about them.
 - Consistent with higher default rates and lower enquiry rates for relationship borrowers.
 - NPB's have lower legacy clients – hence do not engage in zombie lending.
- Possible minimal fix: Data has person ID's (FID)
 - You can check time series of enquiries for the same person.
 - Are enquiries less likely after default
 - You may consider modifying default definition to include potential defaults (say 10-90 days overdue).



Alternative theoretical explanations - 2

- Geography

- PSB's and OPB's are in more rural locations.
- Relationships are more sticky in these areas.
- Lack of reliable electricity supply, reliable internet, office practices where rural branches may need to contact regional office – faxing details which in turn contact rating agency.
- Delays in return of credit score may result in lost business.
- More costly for relationship borrowers as result in loss of future stream of business.

- Possible fix

- Use Pin code level address data of borrower or use rough classification based on Tier 1/2/3 cities and rural areas, available in the data.
- Is there also data of bank branch which enquired? Can you have a urbanization classification for this?
- Use FID's to understand if relationships are more sticky for OPB's and PSB's, relative to NPB's.



Empirical methods – 1.1

Empirical puzzle (not explained)

From Table 6, Panel A				
	Public Sector Banks		New Private Banks	
	No Inq	Inq	No Inq	Inq
Scored	1.29%	0.51%	2.90%	0.64%
Unscored	1.95%	0.78%	2.89%	1.43%
All Loans	1.75%	0.68%	2.89%	1.11%

$$\Delta \text{ pd (I-NI/Unscored)} = 1.95 - 0.78 = 1.17\% \text{ for PSB's.}$$

$$\Delta \text{ pd (I-NI/Unscored)} = 2.89 - 1.43 = 1.46\% \text{ for NPB's.}$$

$$\Delta \text{ pd (I-NI/Scored)} = 1.29 - 0.51 = 0.79\% \text{ for PSB's.}$$

$$\Delta \text{ pd (I-NI/Scored)} = 2.90 - 0.64 = 2.26\% \text{ for NPB's.}$$

- This pattern is also true for relationship versus non-relationship loans.
- Enquiries reduce default probability even when the credit rating agency has no information on the borrower (and thus returns a null score) – both for PSB's and NPB's. **No information appears to give some information to the banks.**



Empirical methods – 1.2

Some conjectures on the non-informational inquiry effect

- (1) Lack of a credit score makes a bank monitor the given borrower more.
- (2) The act of enquiring is itself done when they are unsure about the borrower quality – end result is that these borrowers are monitored more.
- (3) The set of borrowers not enquired about are unobservably riskier – possibly zombies, with full knowledge of the loan officers.

- Most of these would also impact the scored sample. Thus, it is quite difficult in the current setting to separate out bank selection and monitoring from the value of credit scoring.
- Impacts money on table argument.



Empirical methods – 2

Claim: Relationships do not substitute for the score's information.

Method used

1. Show that Inquiry likelihood is positively related to PSB*Relationship Dummy.
 2. Show that predicted likelihood of inquiry using PSB and Relationship has a negative effect on default risk.
- (1) And (2) do not establish that the bank's information set is improved by credit score or by the act of enquiring. It would do so only if the bank's internal score proxy was used in the predictive regression for default.
 - There is a large paucity of borrower level controls – the default prediction has an R^2 of 0.5%. Almost all models of default prediction would do way better.



Data Issues

- Related to above (Empirical methods 1.1 and 1.2), I believe that the entire analysis should only be done using scored loans. There is insufficient information to evaluate if this is done.
- You exclude all risk management queries from the analysis. However, for relationship borrowers that have a loan outstanding, a risk management query may substitute for a formal enquiry for a new loan as well.

	Relationship loans ¹	Non-Relationship loans
PSB	83.5%	16.5%
NPB	59.2%	40.8%

For PSBs, given a large fraction of their borrowers are relationship borrowers, they may use the formal enquiry less since the risk management enquiry may also give them a credit score.

- Related to above, are the scores sticky at the FID level. Perhaps, PSB's have the previous scores and use these.

¹Data calculated by discussant from Tables 4B and 4C, based on actual loans made.



Minor issues - 1

- Non-enquired loans have much smaller sizes, both for PSB's and NPBs. ¹

	Average loan size (No Inquiry)	Average loan size (Inquiry)
PSB	0.16	0.82
NPB	0.22	0.52

Can you do an inquiry regression with only granted loans where you use loan size as control. This may reduce the PSB effect as both NPB's and PSB's are less likely to enquire for smaller loans.

- We don't have a clear understanding of the determinants of likelihood of enquiry. As per paper, it should be 100% in the introduction. If so, what is the rationale for a fitted likelihood of enquiry – which suggests an optimal level based on some cost-benefit analysis, possibly on unobservables.
- One cannot have an optimal level below 100%, and 100% as the optimal level at the same time.

¹ Data calculated from Table 2 by Discussant, presented in INR million.



Minor issues - 2

- You use the scores as RHS variables for predicting enquiry, presuming that the bank's internal scores are correlated with the agency's scores, with the logic being that more risky borrowers should be scored more. However, you find a non-monotonic effect for high and low scores. Is this a core part of your story?
- No explanation is given for why you restrict borrower age to be between 18 and 20 years (legend of Table 7).
- Relationship is not defined in the text. We have to examine the legend to understand that it is based on any single loan from 2006 onwards, which creates a censoring bias for your earlier sample.
- Appendix A1 states you exclude priority sector loans, whereas the baseline excludes priority, gold and agriculture loans. Is this a typo?

¹ Data calculated from Table 2 by Discussant, presented in INR million.



Conclusion

- Nice paper
- Very interesting contrast on relationships hampering adoption of credit scoring.
- More work on reason for non-informational effect of enquiries on default.

