Discussion of:

# Making Sense of Soft Information: Interpretation Bias and Ex-post Lending Outcomes

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# Overview

- Two research questions:
  - How is soft information related to loan outcomes?
  - Do cognitive constraints mediate the relation between soft information and loan outcomes?
- Approach:
  - Gain access to textual notes written by bank employees to measure soft information.
  - Measure loan outcomes as write-offs, delinquencies, etc.
- Findings:
  - Measures of soft information negatively related to bad loan outcomes.
  - Cognitive constraints mitigate this relation.

# My view

- Very cool setting – and probably the closest we can come to actually “seeing” soft information in an empirical way.
- Much improved relative to a version I read last winter.
- Suggestions to consider for this version—or maybe another paper.
  - Jumps right into cognitive constraints – less emphasis on soft info
  - Measures of soft information: How to measure this?
- I’m going to focus on soft information angle.

# The strengths

- Contributes by testing theory: soft information is important, but it has been difficult to measure
  - Agarwal and Hauswald (2010) derives an implicit measure
  - Papers such as Berger et al. (2017) and Drexler and Schoar (2016) infer that something else is going on (e.g., “expertise” or “relationship”) but typically infer this.
  - Others have also collected some internal data, but far from conclusive.
- Also contributes to “cognitive constraint” literature by looking at loan officers.
- Great data: even traced loan officers to LinkedIn
- And important broader question: What is the role of soft information and cognitive constraints with “fintech”?

# What is soft information?
## (Petersen 2004)

- Hard information: The firm generated $10 million in sales.
  - Not just a number.
  - An agreed upon approach to calculating.
  - Can be sent and receiver knows everything sender knows.
- Soft information: The firm owner is honest.
  - Can be put on a scale from 1 to 10.
  - But we might disagree what number it is.
  - Open to interpretation.
- Banks are special, in part because the cumulate soft information (e.g., Diamond 1984, Diamond 1991).

# “Main” result: Table 2

| | (I) *Charge off* | (II) *Delinquency* | (III) *Bad customer* | (IV) *Credit score decline* |
|---|---|---|---|---|
| *Soft information* | -0.066*** | -0.125*** | -0.160** | -0.056 |
| | (-4.585) | (-3.033) | (-2.188) | (-0.920) |
| *Credit score* | -0.018*** | -0.139*** | -0.284*** | -0.051*** |
| | (-5.278) | (-12.402) | (-11.907) | (-3.076) |
| *Debt-to-income ratio* | 0.010** | 0.115*** | 0.147*** | 0.157*** |
| | (2.358) | (11.871) | (8.361) | (11.147) |
| *Loan interest rate* | 0.004*** | 0.037*** | 0.033*** | 0.017*** |
| | (9.353) | (38.027) | (19.096) | (12.619) |
| *Loan exception* | 0.001 | 0.019*** | 0.039*** | -0.005 |
| | (0.492) | (3.074) | (3.424) | (-0.465) |
| *Secured loan* | 0.004 | 0.005 | -0.054*** | 0.015* |
| | (1.451) | (0.781) | (-4.450) | (1.674) |
| *Loan amount* | 0.000 | -0.009*** | -0.011** | -0.018*** |
| | (0.011) | (-3.766) | (-2.499) | (-5.610) |
| *Loan maturity* | -0.001 | -0.001 | 0.003 | 0.014*** |
| | (-0.971) | (-0.804) | (0.943) | (4.182) |
| *Borrower tenure* | -0.000 | -0.004* | -0.007* | -0.005 |
| | (-0.289) | (-1.664) | (-1.817) | (-1.428) |
| *Total number of accounts* | -0.004*** | 0.004 | 0.007 | -0.006 |
| | (-3.408) | (1.232) | (1.339) | (-1.147) |

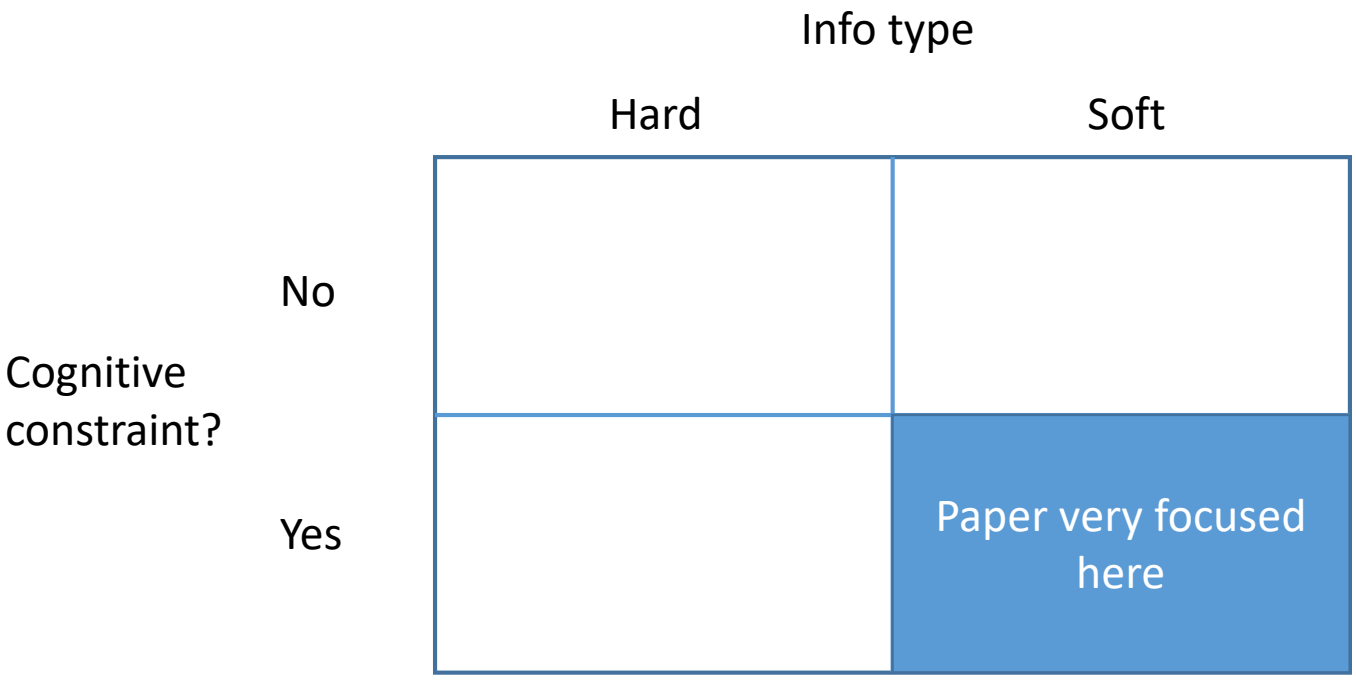
# Suggestion 1: Big picture

- Does the use of soft information help?
- This is a big unanswered question that gets side-stepped in this paper a bit.
- Banks moving to less relationship banking and more codified/hard information, but does this result in better info?
- Idea: Take advantage of the 2005 organizational change of the credit union in which soft information was collected?

# Suggestion 2: Model of lending decision

- What is objective function? Maximize profits or minimize charge-offs?
- What model of bank decision-making doe the paper have in mind?
- Soft info helps bank make better lending decisions:
  - Lots of soft info → could lead to NOT making a bad loan
  - This paper: All observations conditional on making a loan, then infers that more soft info → less likely bad outcome. Why is this necessarily the case?
- Idea: Does soft information help the bank better price the loan?
  - Interact interest rate with soft information → Interest rate should be a better predictor of future default with soft info?

# Suggestion 3: Soft info vs. constraints



# Suggestion 3: Soft info vs. constraints

- Paper immediately jumps into cognitive constraints
- Yet, little research investigates soft info in the first place.
- Suggestion:
  - What aspects of soft info seem to be most relevant?
  - How does soft info interact with hard info?
    - Complements? Substitutes?
- Why are main effects on cognitive constraints insignificant?

# Suggestion 4: Soft measures

- Soft info construct: Information that loan officer has that is not codified in hard information source such as credit score.
- Soft info measures:
  - proportion of total text which is “soft” info;
  - absolute value of log(total text) orthogonalized to hard info sources.
- Very difficult to measure (because it is “soft” in the first place!), but I have concerns about both—but have suggestions!

# Suggestion 4: Soft measures

- Proportion of “soft” text: Use a dictionary capturing potential soft info words.
- Dictionaries are nice because they have less discretion.
- But the words used imply both “good” and “bad” directions:
  - “degree” “education” “bonus” “happy” “good”
  - “overwhelmed” “frustrated” “ditch while he was drinking”
- Paper does not take advantage of the “direction” of these words→ but presumably different implications
- Idea: the discussion on pages 16-17 of paper including quotes of loan officers revealing (e.g., healthcare problems which may seem like a shock)

# Suggestion 4: Soft measures

- Absolute value of orthogonalized log(total text)
- Based on Agarwal and Hauswald (2010) approach, but seems less applicable here.
- Why absolute value? One word seems like the least amount of soft information, but would be coded as the most?
- Suggestion: Just use log(total text)
  - Natural measure of "how much" they know
  - Still no discretion involved
  - Avoids issue of proportion or absolute value
  - Keep observations with no text → No soft info?

# Suggestion 4: Soft measures

- Consider the honesty example:
- “Owner is honest”
- “Owner is dishonest”
- “I give the owner an honesty rating of 3 out of 10”
- I think the real question is whether the officer’s assessment predicts performance in expectation.
- Credible null: “I met J. today…what a guy! He slapped me on the back about eight times.” → Sign that a loan officer going to misuse soft info?

# Suggestion 5: Call center

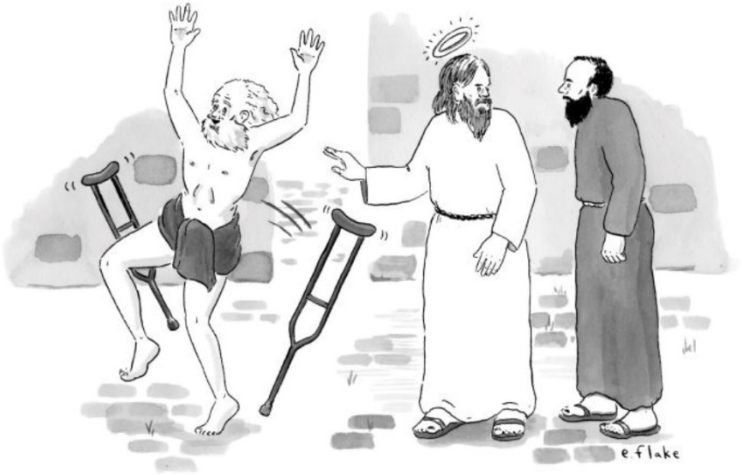
- Cool supplementary test with the call center loans.
  - When loan officer busy, borrower randomly assigned to call center personnel.
  - Find similar results → Mitigate endogenous matching.
- But what else could be happening?
  - Recall definition of hard information: Receiver knows everything sender knows.
- Drexler and Schoar (2016) find that when loan officer away:
  - Credit to borrowers declines and lending decisions get worse.
  - They infer the presence of non-transferable soft information.
- Did this credit union find a way to “transfer” soft information?

# Other thoughts

- Generalizability
  - What is the objective of a credit union? Profitability? Helping members?
  - Top productivity credit union. Implications?
- Interest rate
  - In theory, shouldn't this capture both hard and soft info?
  - If so, should this be included as a control variable?
- Cross sectional tests where soft info improves outcome?
  - Situations in which soft info particularly valuable.

# Concluding comments

- Important topic:
  - Timely given fintech developments → hard information
  - Timeless related to theoretical constructs
- Great setting with potential for novel insights.
- Possibilities for even more follow up papers?




*"Yeah, but good luck getting it peer-reviewed."*

*Source: The New Yorker, October 9, 2015*