Discussion of: The Importance of Technology in Banking During a Crisis

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The views expressed here are my own and do not necessarily reflect the opinions of the Federal Reserve Bank of Philadelphia or the Federal Reserve System.

1. FinTech in Banking (circa 1955)

Source: Bank of America

[ERMA] *"...handled, read and sorted a wide variety of paper checks at high speed. It posted to accounts, identified stop payments and holds, flagged overdrafts, calculated service charges, stored account information, printed daily and monthly statements, and sorted 600 checks per minute."*

2. Is IT Adoption Good for Financial Stability?

Some past industry leaders in information technology:

LTCM
The financial technology company

ENRON

- Advanced IT and analytics may enable financial firms to take excessive risks, or give a false sense of safety and/or precision
- Other concerns too: in particular cyber-risk

3. This paper

- Question: Is IT adoption good or bad for financial stability?
  - Answer – good!
  - 1 std dev increase in IT = 10% lower loan losses during the Great Recession (no effect during "normal" times)

- Overall reaction: very interesting, well-executed paper.
  - Important policy-relevant research question
  - Rich establishment-level data on IT adoption.
  - Serious attempt at identification, to isolate role of IT vs other factors (e.g., management quality)

4. Comments

1. Mechanisms
2. Measurement
3. What drives technology adoption?

5. How (and where) does IT matter?

- *How* does IT improve loan performance during downturns?
  - Better screening and monitoring of individual loans?
  - Better management ("servicing") of nonperforming loans?
  - Better firm-wide risk measurement & risk management?
  - Fraud identification?
  - More efficient price discrimination? (i.e. "skimming")

- Which types of loans benefit?
  - Stronger effects of IT among loans with more "hard" underwriting data (e.g., residential mortgages, credit cards?)

5. Unpack the results

- Suggestion: Study loan performance on a disaggregated basis:
  - Available for at least 15 loan categories in Y-9C data (e.g., see Hirtle et al., 2016 + FRB-NY Quarterly Trends report)
  - Huge cross-sectional variation. Peak NPLs = 25% for housing construction loans, but 2% for auto loans

- Important for two reasons:
  1. Help shed more light on mechanisms
  2. Convince us results aren't driven by composition effects

6. Measuring loan performance

$$\text{NPL}_{bt} = \alpha_b + \gamma_t + \beta \text{ IT intensity}_b \times \text{crisis} + \varepsilon_{bt}, \quad (1)$$

- In this kind of framework, stock of NPLs is problematic measure of loan performance, esp. across mix of loan types
  - Affected by length of time a bad loan stays on-balance-sheet (e.g., speed of foreclosures, sales to debt collectors etc.)
  - Credit cards have low NPLs but very high credit losses

- **Suggestion:** instead/also study net chargeoffs (i.e. realized losses)
  - Ideal: transitions into default (but not available on Y-9C). You do study using Freddie Mac data though.

7. What Is Driving IT Adoption?

- Paper finds IT adoption is uncorrelated with a range of bank characteristics (size, wages, profitability, capital ratios etc.)

- Surprising (to me) esp. given what we know from existing work:
  - Larger and more profitable banks adopt specific technologies faster
    - Online banking [Hernandez-Murillo et al., 2010]; ATMs [Hannan and McDowell, 1984, 1987]
  - IT *expenditures* as % of assets or revenue decreasing in bank size due to scale economies [Kovner, Vickery and Zhou, 2014]

- What accounts for absence of results here? Dimension of technology studied (PCs / capita)? Low statistical power? Measurement error?

Suggestion: Make full use of rich panel dimension of data to study drivers of IT adoption (not just cross-sectional regression)

Thanks!