The Disciplining Effect of Bank Supervision: Evidence from SupTech

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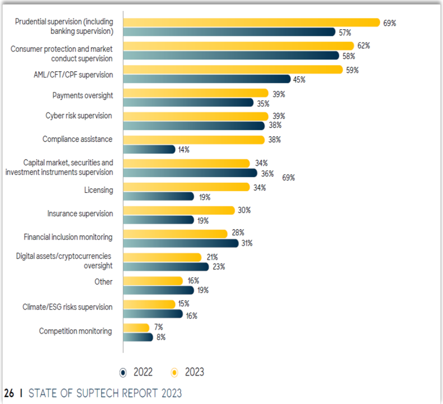
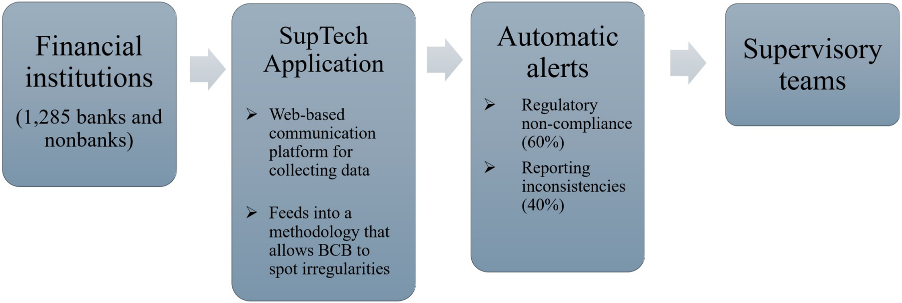
SupTech

- Suptech - “supervisory technology” - the application of technology and data analysis solutions to augment a financial authority’s capabilities
- 2024 survey[a] of 64 financial sector supervisors: 81% have at least one SupTech application in place
- Central Bank of Brazil (BCB) is an early adopter (World Bank, 2018)

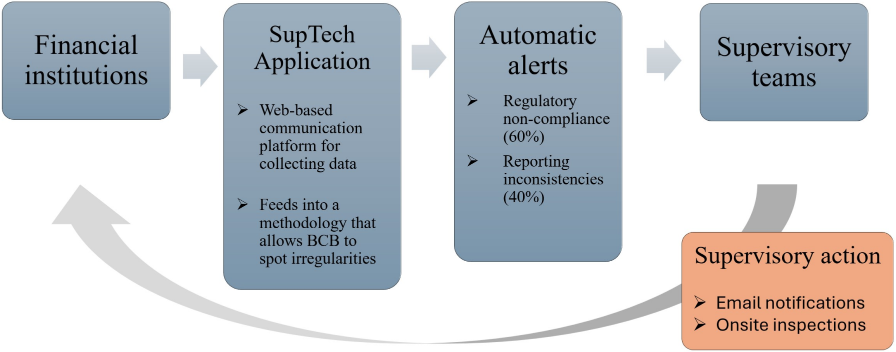


[a]By Cambridge SupTech Lab

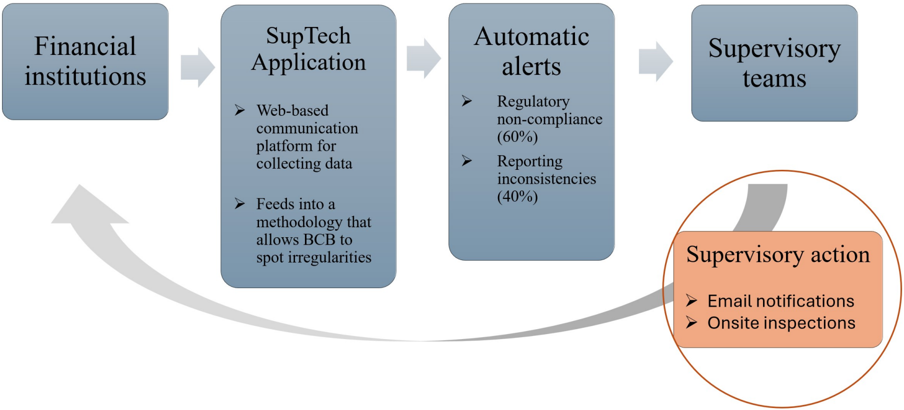
SupTech at BCB



SupTech at BCB



SupTech at BCB



Effects of Supervisory Actions

- **Bank sanctions**
  Improve banks' financial soundness (Delis et al., 2017)
- **On-site inspections**
  Reclassification of loans as non-performing; drop credit to underperforming firms (Passalacqua et al., 2020; Bonfim et al., 2022)
- **Stress tests**
  Reduced credit supply to risky borrowers (Acharya et al., 2018; Cortes et al., 2020)
  Reduced credit risk (Kok et al., 2023)

Channels

- **Bank capital**
- **Market discipline**
- **Supervisory scrutiny/moral suasion**

Data

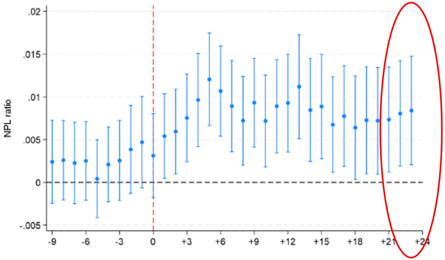
1. Proprietary dataset from BCB on supervisory actions that result from BCB's SupTech application
2. **Bank-level data**: monthly balance sheet information
3. **Loan-level data**: monthly data from credit registry
4. **Firm-level data**: quarterly data on firm employment and profitability

Results

1. **Improved reporting quality**: 20% $\uparrow$ in non-performing loans & loan loss provisions
   - effects is persistent; driven by regulatory non-compliance events
2. **At loan level**: reallocation away from less creditworthy borrowers
   - able to control for loan demand (Khwaja & Mian, 2008) and matching of lenders & borrowers
3. **Spillover effects to the real economy**: less creditworthy borrowers cannot compensate for the drop in credit from treated institutions
   - smaller effects that the literature on on-site bank inspections

SupTech Application

- Of 1,285 institutions: 187 were affected once, 28 twice, and 6 three or more times
- Surprisingly low "repeat" offenders: long-lived effect or **Goodhart's law**: "Any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes"



(a) NPL/TA

- Do we see less alerts after 1st supervisory action?
- Are treated banks doing better in scheduled on-site inspections? Do they get fewer penalties? Do they do better in stress tests?

Strength of SupTech supervisory scrutiny

1. SupTech vs planned inspections

- Financial institutions in Brazil are subject to periodic on-site inspections, which occur every 1 to 3 years
- **Key difference:** SupTech events are unplanned and focused on a particular part of institutions' operations

- Overlap between SupTech inspections vs scheduled inspections?
- Could you exploit the timing of SupTech events and scheduled inspections?
  - On-site inspections can lead to large credit reductions to bad borrowers (Passalacqua et al., 2021; Bonfim et. al, 2022)
  - SupTech "treated" institutions should see smaller effects following on-site inspections

Strength of SupTech supervisory scrutiny

2. Intensity of supervision

- Paper focuses on **severity** (regulatory non-compliance vs reporting irregularities) and **complexity** (time to solve) of events
- Kok et al. (2023, JFI) show that the disciplining effect of supervision was stronger among banks more "intensely" supervised during 2016 EU-wide stress test

- Unplanned visit vs email exchange could be a proxy of "intensity"?
  $\textit{Treated} \times \textit{Post} \times \textit{Intensity}$
- Heterogenous effects in the bank-loan level specifications as well

Control sample

- Effect on non-treated institutions in the same municipality is large: NPL and loan loss provisions increase by 10% and 20%, respectively
  - These institutions are included in the control sample
  - Market discipline channel is shut down because SupTech events are not publicly announced → could depositors/borrowers also learn about these visits?
- Sample is comprised of both banks and non-banks
  - How comparable are SupTech events?
  - Are these in both treated and controls?
  - We know very little about the supervisory actions of non-banks
- A nice control: institutions with SupTech alerts, but no action

Conclusion

- Great paper & very nice data
- Very well-executed and strong results
- Important contribution to the literature; the first paper of many to come

Thank you!