Motivation

• Banks need to have their own funds - equity/capital - to cover possible losses
• The capital determines how much risk banks can take
• The regulator asks banks to have sufficient capital based on:
  1. “One-size-fits-all” framework
  2. Banks’ internal models
    • Banks incur penalties if the internal model does not properly predict risk
    • These penalties comprise additionally required capital (up to 1/3 more) and possibly a model revision

Q: What is the effect of regulation on (a) model choices and (b) model performance?

Mechanism:

• Banks: how much capital does a model result in?
• Regulator: how well does a model predict risk?
• Banks know their true risk model (better)
• The regulator does not (and relies on what banks report)

Basel Framework for Internal Models

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<td>Green</td>
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<td>Red</td>
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Capital = (3+Δ) x Risk

- Risk-sensitive capital and penalties
- Penalties: mechanism to achieve the optimal capital requirement
- Risk models: tool to deal with uncertainty about penalties

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Mechanism:

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Empirical:

• The regulator asks banks to have sufficient capital based on: the existing framework
• Banks need to have their own funds - equity/capital - to cover possible losses
• The capital determines how much risk banks can take
• The regulator asks banks to have sufficient capital based on: the existing framework

This paper

• Theory: identify optimal combination of capital and penalties to ensure truthful reporting
• Empirics: test whether the existing regulation improves banks’ risk model quality

Data

17 banks from Europe, Canada and the USA over 2002-2019
• Hand-collected data on the self-reported risk model outcomes and revisions: quarterly, annual and Pillar III reports
• Supervision data: Bank Regulation and Supervision Survey
• Balance sheet data: SNL, Orbis, Fitch
• Volatility data: St. Louis Fed, Eikon

Optimal Capital and Penalties

- It is optimal to penalise more risk-averse banks less
- Problem 1: only weak proxies for banks’ risk aversion (Camba-Méndez & Mongelli, 2021)
- Solution: use model revisions as more risk-averse banks should revise their models more to better predict risk and decrease uncertainty about penalties if the model does not perform well
- Problem 2: model revisions are endogenous
- Solution: (i) IV; (ii) 2013 change in capital regulation for US banks as a quasi-exogenous shock to their risk reporting requirements

Policy Implications

Empirical evidence suggests that the current penalties are insufficient to ensure truthful disclosure:

- Lower reported risk has two effects on capital requirements:
  (i) lower capital requirement based on the reported risk
  (ii) (possibly) more risk underreporting cases ⇒ if too many, higher capital requirement due to penalties
- To incentivise banks, regulation should be such that the penalty effect dominates
- Recent revisions of regulation may further impair truthful reporting:
  ▶ Δ Capital is halved as of 2022 (Basel Committee, 2019)