

Discussion of:
"Strategic Selection of Risk Models and Bank
Capital Regulation"
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1. HEC and Crest/X

Roadmap of Discussion

Motivation

Optimal regulation : first-best, second-best

Regulation with Basel's Toolbox

Conclusion and Comments

Motivation

- Banks' regulation heavily relies on banks' self-reported risks
- Questions :
 - can the regulator test whether banks strategically misreport risks?
 - say they do, what is the optimal regulatory answer?
- Very important topic for the regulator

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Analytical Environment

- Three risk-neutral agents
 - **borrowers** demand $q(r)$ loans, inverse demand $\rho(L)$; a random proportion t of projects fail
 - **depositors** are insured; they lend to financial intermediaries at rate r_0
 - **intermediaries** own E in equity; they borrow from depositors and grant loans L as monopolists, determining $r = \rho(L)$
- Intermediaries deal with two price-taking groups of agents
- **Uncertainty** bears on which model is driving the distribution of project failure
 - t draws from pdf $f(., s)$ where s is the correct risk model set by nature
 - intermediaries might choose to strategically report $f(., s')$ to the regulator (where $s' < s$ by MLRP : a more optimistic model allows greater leverage)

Regulation under complete information

- Benchmark case : regulator knows true model s
- She maximizes total welfare by choosing capital requirements α ($= E/L$) and transfers $T(s, t)$ subject to two constraints
 - (LL) - limited liability
 - (IR) - individual rationality
- The optimal level of loans is granted by setting $\alpha(s)$ increasing in s (model-sensitive)
 - No rent is left to the bank ($T^*(s, t)$ set that way)

→ The first-best regulation relies on **risk-sensitive capital requirements** (as in Basel); but this leads banks to misreport their risk when information is asymmetric (incentive compatibility is not met)

Regulation under incomplete information

Timing

- period 0** Regulator specifies **capital ratio** $\alpha(s)$ and **penalties** $T(s', t)$ to be paid if t defaults materialize and model s' is used
- period 1** True model s given by nature, bank reports model $s' \in [\underline{s}; \bar{s}]$ at a **cost** $c(s', s)$
- period 2** Intermediary supplies $L = E/\alpha(s')$ loans, r determined by $q(r) = L$
- period 3** A proportion t of borrowers default, payoffs are realized and penalties $T(s', t)$ are paid

→ The mechanism must be **incentive-compatible** for the bank not to opt out :

$$\forall s, s', \pi(s, s) - \mathbb{E}_s(T(s, t)) \geq \pi(s', s) - \mathbb{E}_s(T(s', t)) - c(s', s) \quad (\text{IC})$$

Regulation under incomplete information

Case 1 : easily-distinguishable models

- If models are easy to distinguish, proposition 1 tells us that the **first-best can be reached**, correct model is revealed, and no rents are left to intermediaries
- Proposing a constant payoff as long as the realized level of defaults is below a threshold (increasing in s) and 0 otherwise is a menu reaching first-best
- In general, **rewarding the bank when its forecasts were accurate is a powerful tool**

Regulation under incomplete information

Case 2 : undistinguishable models

- If uncertainty bears on tail risks, models are not easy to distinguish
- Proposition 2 tells us that any revealing mechanism implementing the first-best when models can only be distinguished in the tail, involves bail-outs
 - need to **reward bank suffering high losses when reported risk is high** (bailing out truthful but unlucky banks → informational rent left to banks)
- Proposition 3 tells us that if bail-outs are *not* implementable, two possibilities
 - **high capital requirements** and no rents
 - **less sensitive capital requirements** (rent for high-risk type)

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Modeling Basel

- Current reforms use restrictions on attainable risk-weights, i.e. they modify the function α (nothing on penalties)
- When penalties cannot be used at all, proposition 4 tells us that :
 - two distortions traded-off : incentives to report s truthfully vs incentives for other types to report s
 - capital requirements increase in the reported risk measure, but less so than in the first-best

Modeling Basel ctd

Positive analysis : current proposed reforms

- Current reforms propose complementary ratios (Basel I, Collins amendment in the US...)
- Are leverage ratios / floors on capital requirements a good solution to regulatory arbitrage?
- Although a particular case of proposition 4 (less sensitive capital requirements), **NO**
 - they are in general **not** incentive-compatible
 - market equilibrium effect : banks for which leverage ratio is binding reduce their supply of credit $\rightarrow r$ increases \rightarrow high risk intermediaries have incentive to lend more and thus report more optimistic models

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Conclusion : take-away for the regulator

This paper addresses a key question for the regulator, in a realistic manner. Given asymmetric information :

- Cost of misreporting should always be made as high as possible
 - reduction of misreporting incentives (if $c_1(s)s \geq \bar{\pi}'(s) \forall s$ then no misreport)
 - lower discrepancy between first-best and second-best capital requirements under Basel (proposition 4)
- In terms of welfare : Penalties with bail-outs > Penalties without bail-outs > Capital requirements without penalties > Leverage ratios and non-risk based constraints

Conclusion of discussion

- Very nicely written, policy-oriented, I learned a lot
- Tractable framework to answer key regulatory questions
- Predictions are drawn and compared to existing literature
- Novelty compared to existing models : focus on realistic constraints and study regulatory options that are actually contemplated

Comments

- Barely any minor remarks, publishable as is
- Do those findings translate to other intermediaries' regulation?
 - as far as I know, insurance companies use capital as a signaling device
 - solvency i and ii
- Is the regulator's focus mostly on bankruptcy risks? how about...
 - contagion / systemic risk? (Adrian & Brunnermeier's 2012 "CoVaR")
 - macroprudential approach? in favor of non-risk based leverage ratios? (Hanson, Kashyap & Stein 2010)

→ maybe it is hard to rely on banks' internal risk models to tackle systemic risk
- Shadow banking as regulatory arbitrage?
 - maybe there are other reasons you want regulated banks to hold capital want to stay commercial (cf Chretien & Lyonnet 2015) that enable you to relax their IC constraint?