



Credit Allocation, Capital Requirements and Procyclicality

Esa Jokivuolle, Ilkka Kiema, Timo Vesala

Discussion by Kasper Roszbach
Sveriges Riksbank

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■ Paper topic

- What are the pro-cyclical effects of capital regulation?
- How do risk-based capital requirements change risk-taking and allocation of credit in countries with “IRB banks”?
- Should capital requirements vary over the cycle?





■ Definition

- Macroeconomics
 - “Pro-cyclicality”: a variable positively correlated with state of the economy.

- Financial stability policy
 - Pro-cyclicality: a policy that increases fluctuations in ...
 - GDP
 - Credit





■ Main findings

- The effects of risk-based capital requirements (RBCR) on GDP are less pro-cyclical than of flat-rate capital requirements!
 - RBCR can implement first-best lending volume and loan composition.
 - *Optimal* capital requirements should be lower in bad times than in good times.
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■ Model ingredients

- Three investment options: $\eta \in \{L, H, W\}$
 - Skill levels $\theta \in [0, 1]$
 - States of economy $\sigma \in \{N, R\}$
 - Markov distr. $\Upsilon(\sigma)$
 - Separating equilibrium: $\theta \rightarrow \{H, L, W\}$
 - Competitive banks set r_H and r_L
 - $P(\text{success} | \eta) = f(\sigma, \theta)$
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■ How the model works

- Given macro state σ , skill level θ , and credit prices q , people pick a risky project from $\{H, L\}$, or W (ork)
 - Because of separating equilibrium, relatively high-skilled entrepreneurs among the α_1 with H-projects and α_2 with L-projects subsidize low-skilled ones in their own project class.
 - Policy $|\sigma$ = try to (i) get optimal share $(1-\alpha_1-\alpha_2)$ of all people into W , and (ii) distribute credit efficiently over $(\alpha_1+\alpha_2)$ entrepreneurs
 - Banks cannot observe success of individual entrepreneurs, but expect average returns within each investment class. No learning.
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■ How the model works (2)

- Separating equilibrium: banks know which project (H, L) they face when deciding on loans
 - Return is uncertain, but only because θ_i is unknown
 - A1, A5: skills have greater impact on high risk projects' return and probability of success
 - $P'_L(\theta) < P'_H(\theta)$, and $V'_L(\theta) < V'_H(\theta)$ and stricter form
 - Creates r-differences between (H,L) and drives differences in credit supply to H,L.
 - Changes in γ alter pay-offs on H,L and generate shifts in α_1 and $\alpha_2 \Rightarrow$ cyclical variation in output, credit and capital.
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■ 1. Separation project and skill risk

- Is it realistic to let entrepreneurs separate themselves according to one (crude) risk measure of their project (H, L), but then allow actual risk in the project to vary based on another factor (θ)?
 - In other words: Can banks separate project and skill uncertainty?
 - Use of credit scoring etc. is widespread to avoid coarse pools of heterogeneous borrowers
 - Is a proper characterization of high-risk projects: “skills are more important”?
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■ 2. Adverse selection part of story

- Banks only experience uncertainty about investor type, not about project type

⇒ This paper is about adverse selection.

- Capital regulation, its cyclical effects on - and allocational efficiency of credit are very much about (macroeconomic) *project* uncertainty and *moral hazard* in lending.
 - Adverse selection (skill revelation, no learning) particularly relevant to *new* lending, i.e., in lending booms
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- 3. RBCR less pro-cyclical
 - Are RBCR less procyclical than FRCR?
 - But measured using output volatility and output mean as criterion
 - Use correlation between {lending; output} in each RBCR scenario and a benchmark economy instead?
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■ 4. Effects of optimal RBCR

- Optimal RBCR are “pro-cyclical”, i.e., decline during a recession.
 - But banks only price credit, do not go bankrupt.
 - First best lending volume and - allocation of credit only affect output, not bank default frequency.
 - Assume $P(\text{success})$ declines more for high risk than for low-risk projects in recessions





- 5. What procyclicality dimension?
 - Some confusion about the variable of interest
 - Capital, capital buffers, or credit?
 - Cf. Repullo and Suarez (2009)
 - “Capital buffers” strongly procyclical under Basel II and slightly countercyclical under Basel I
 - Capital is countercyclical under Basel I and Basel II
 - Credit rationing displays more cyclical variation under Basel II
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■ Conclusion

- Very important topic
 - Look at unaddressed dimension of RBCR
 - Indicates RBCR can lead to a reduction in adversely selected high risk projects (by low skill people)
 - This mitigates other procyclical effects of RBCR
 - Be clear about implication of assumptions!
 - How does size of adverse selection effect quantitatively compare to other drivers of credit and capital cycle?
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