The Crossborder Effects of Bank Capital Regulation.

Saleem Bahaj (UCL) and Fred Malherbe (UCL)

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- International competition between regulators.
  - What are the strategic incentives? Externalities?
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  - These are reciprocated. This changes the game.
- This paper: no longer competition for market share, now competition for capital.

The model

- Static, two country model, competitive markets, risk neutral agents: Home and Foreign ($'$).
- Technology:
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  - Penniless firms, CD production: AK^{α}; stochastic TFP.
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- Banks, mobile across borders:
  - Lend to firms ($X = K$ in equilibrium).
  - Raise insured deposits + equity capital from anywhere.
  - Upward sloping global supply curve for bank capital; slope $1 + z^{*}$.
  - Equity capital scarce .

Capital Requirements

- Basel III like capital requirement

$$\underbrace{n}_{\text{equity of Home bank}} \geq (\overline{\gamma} + \mathrm{CCyB}_t) \times \left(\underbrace{x}_{\text{Home lending}} \right) + (\overline{\gamma} + \mathrm{CCyB}'_t) \times \left(\underbrace{x'}_{\text{Foreign lending}} \right)$$

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- Standard features:
  - Requirement binding in equilibrium.
  - Specialisation(risk-shifting). Intepretation: BHC subsidiaries or stand-alone.

Comparative Statics

First step: solve for equilibrium given a pair γ, γ'.

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key objects:

equity capital *allocated* to lending in each country

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Lemma

$\frac{dN^*}{d\gamma} \gtrless 0 \Leftrightarrow \frac{\partial R(N^*, \gamma)}{\partial \gamma} \gtrless 0$

Spillovers

Assume $\frac{\partial R(N^*,\gamma)}{\partial \gamma} > 0$; two sources of extra capital:

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BUT can $R(N^*,\gamma)$ increase with γ?

The answer is yes...

Intuition:

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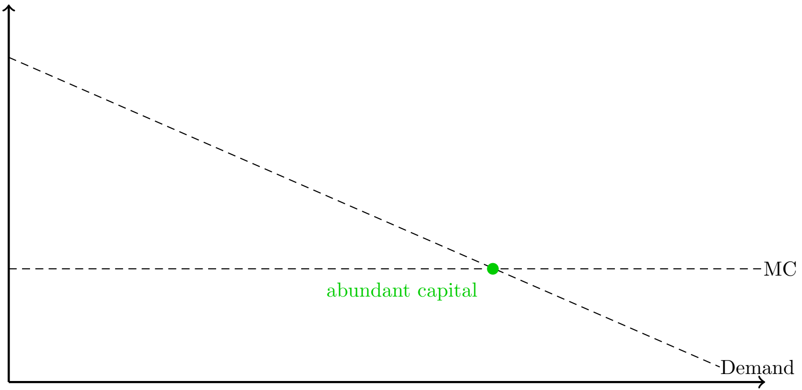

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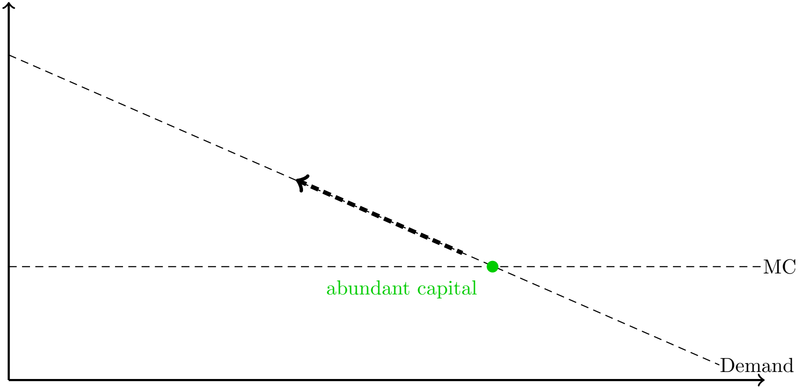

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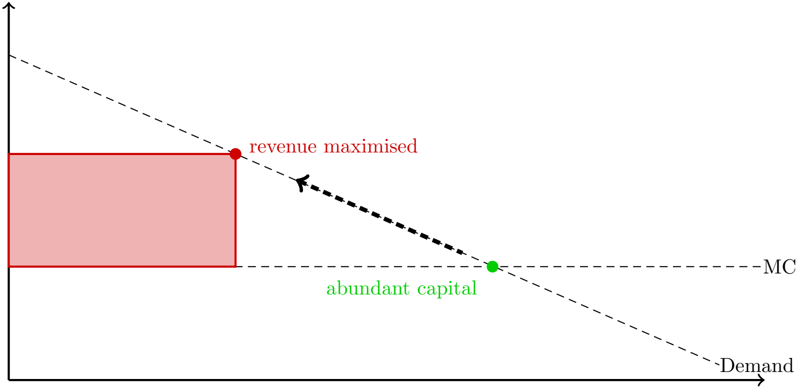

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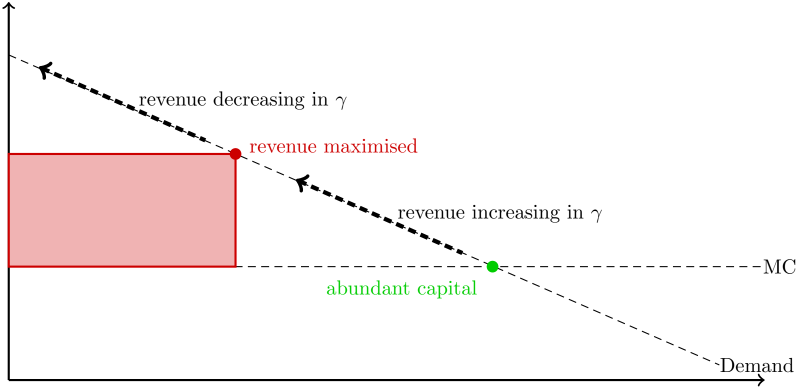
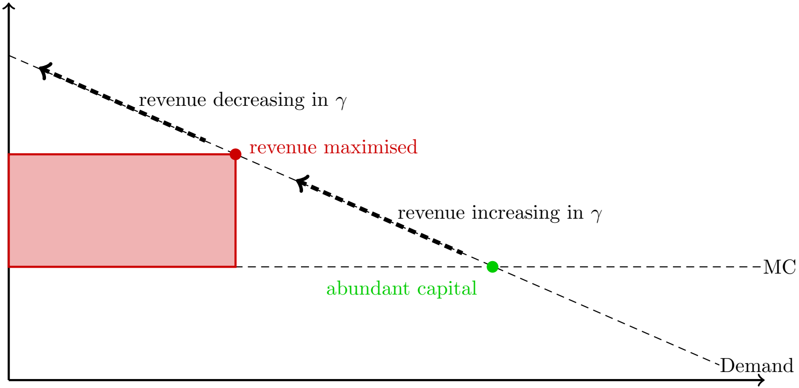


Implications

- For any γ' there is a "Revenue maximising requirement": $\hat{\gamma}(\gamma')$
- If $\gamma < \hat{\gamma}(\gamma')$, raising γ raises R and, therefore, $\frac{dN^{*\prime}}{d\gamma} > 0$.



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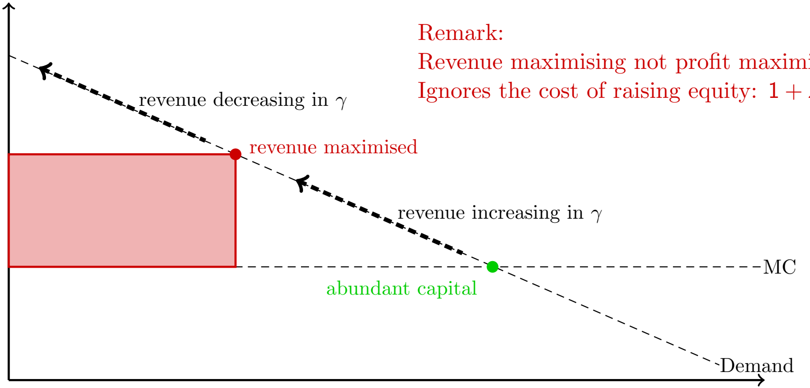

Remark:
Revenue maximising not profit maximising requirement.
Ignores the cost of raising equity: $1 + z^*$.

The Policy Game

X = Aggregate Home lending.
We assume ex-ante symmetry.

- Welfare function $\widetilde{\pi}(X, N) = \underbrace{(X^{\alpha} - X)}_{\text{econ surplus}} - \underbrace{\widetilde{L}(X, N)}_{\text{loss function}}$
- Maintain assumption: $\widetilde{L_N}(X, N) < 0$.

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Definition

Symmetric Nash equilibrium: $\gamma^{nash} \equiv \arg\max_{\gamma} \pi^*(\gamma, \gamma^{nash})$

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Ultimately, what we are interested in is $\gamma^{\text{nash}} \gtreqless \gamma^{\text{col}}$

Externalities

- Collaborative FOC: $\underbrace{\pi^*_\gamma(\gamma, \gamma')}_{\text{Competitive FOC sets to 0}} + \underbrace{\pi'^*_\gamma(\gamma', \gamma)}_{\text{externality, if } >0\ \gamma^{\text{nash}} < \gamma^{\text{col}}} = 0$

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- $\widetilde{\pi}'_{N'}(N'^*, \gamma') > 0$ means Foreign would like more N' given γ'.
  - Sufficient condition, an increase in γ raises welfare holding lending fixed.
- The sign of the externality is the same as that of $\frac{dN'^*}{d\gamma}$. So:

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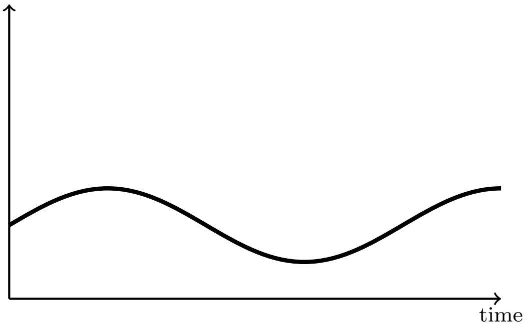
If capital is abundant externality< 0 and $\gamma^{col} < \gamma^{nash}$. Vice versa if capital is scarce.

Capital Scarcity and Policy Implications



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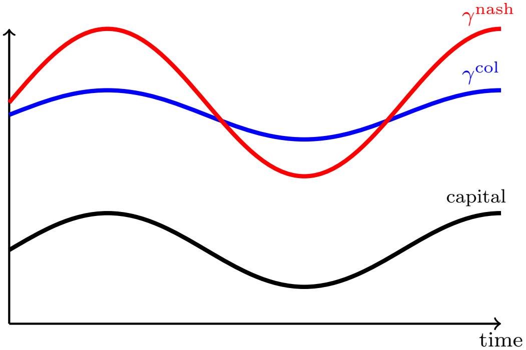

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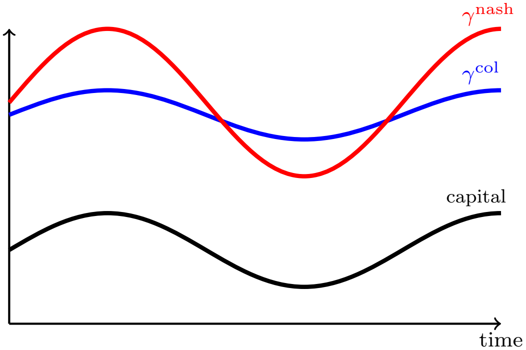

In the paper, externality ↑ in:

(i) Risk shifting incentives.

(ii) Deadweight losses

Both also high in downswings.

Conclusion

- New Regime: Time varying buffers and **Reciprocity**.
- The competition among regulators $\nRightarrow$ race to the bottom.
- Contribution:
  - Analytical framework to study current regulatory environment.
  - Raising requirements can generates capital outflows and *inflows*.
  - Inflows generate incentive for excessively tight regulation relative to collaboration.
  - Direction of flow governs varies over the cycle with implications for the CCyB.

A parting quote...

Capital-constrained banks are more likely to reduce their foreign exposures than their domestic ones [...] the build-up of a capital buffer in one country [...] should not impair the functioning of financial intermediation in other countries.

L. de Guindos (2019).