Financial Cycles and Policy Response in Latin America

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Capital Requirements, Risk Taking and Welfare in a Growing Economy

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Background

- Link between financial regulation, risk taking, and bank safety: studied in several contributions.

- Blum (1999), Diamond and Rajan (2000), Hellmann et al. (2000), Repullo (2004), and more recently De Nicolò and Lucchetta (2012), Gorton and Winton (2014), and Martinez-Miera and Suarez (2014).

- Key factors in creating incentives to engage in excessive risk taking: Limited liability, government guarantees, degree of market competition.

- Other strand of literature: motivated by the accommodative monetary policy pursued by central banks in the aftermath of the global financial crisis.

- Focus on the impact of low interest rates on risk taking and coordination of monetary and macroprudential (MaP) policies to promote stability.

- Dell'Ariccia et al. (2014), Cociuba et al. (2016), and Collard et al. (2016).

- Most of these studies: focus on bank capital requirements (CaRs).

- Common argument: CaRs mitigate moral hazard problems and risk taking because shareholders have more “skin in the game.”

- Not a robust theoretical prediction, but some recent studies have provided empirical support.

- However, few contributions on the **longer-run** implications (in terms of growth and welfare) of the interactions between financial regulation, risk taking, and financial stability.

- Potential **trade-off** associated with CaRs.

- If agents have limited opportunities to borrow and smooth shocks, the real effects of financial volatility can be large and highly persistent.

- MaP policies can improve welfare by contributing to a stable environment in which agents can assess risks and returns associated with their investment decisions.

- But they can also be detrimental to **longer-term growth and welfare**, due to persistent effect on risk taking and incentives to borrow and lend.

- e.g., they may induce structural shifts in banks' portfolio composition; move away from risky assets toward safe(r) investments .

- They may also constrain their capacity to lend; high interest rate spreads, and suboptimal levels of borrowing .

- In developing countries, where sustaining high growth rates is essential to increase standards of living, understanding the terms of this trade-off is particularly important.

- Key question: optimal CaR ratio that internalizes this trade-off.

- Scant analytical literature; Van den Heuvel (2008, 2016).

- However, no endogenous growth.

- Agénor (2016): endogenous growth, but focus on reserve requirements (MaP, tax on liabilities)…

- …and indirect measure of risk taking (monitoring).

Model Summary

- 2-period OLG model with constant population.

- Agents: households (many members; supply labor and become **depositors** or **bankers** at end of first period), entrepreneurs (produce capital), banks, final good firms, financial regulator.

- Entrepreneurs can use a **safe (S-) technology** and a **risky (R-) technology** (stochastic outcome).

- **R-technology**: socially inefficient, but limited liability creates incentives to use it.

- Banks provide either safe loans or a combination of safe and risky loans.

- Detectability threshold for risky loans (binding in equilibrium).

- Regulatory regime: equity is fraction μ to loans.

- Arrow-Romer externality for endogenous growth. Steady-state growth rate with safe loans only:

$$k_{t+1}/k_t = 1 + g = \frac{\varkappa}{\mu}(1 - \alpha)A$$

- Net effect of μ is positive.

- Necessary and sufficient condition to eliminate the risky-loan equilibrium: expected excess return on risky loans cannot be positive (no incentive to offer risky loans).

- Eliminating risk taking is about the **type** of credit, not necessarily the **amount** of credit.

- Provides lower bound on CaR rate, or **feasibility constraint**.

- Key issue: link between the lower bound, $\tilde{\mu}$, and **socially optimal** value of the CaR rate.

Optimal
Capital Requirements

- Solve for μ that maximizes social welfare

$$\mathcal{W} = \sum_{h=0}^{\infty} \Omega^h 0.5(V_{t+h+1}^E + V_{t+h}^H)$$

- $\Omega \in (0,1)$: regulator's discount factor.

- Approximation along the balanced growth path:

$$\mathcal{W} \simeq \frac{V_m^E + V_m^H}{1-\Omega} + \frac{\Omega(2+\Lambda)}{(\Omega-1)^2} \ln(1+g)$$

- Solution $\mu^* |_{l_t^R > 0}$ will never be selected.

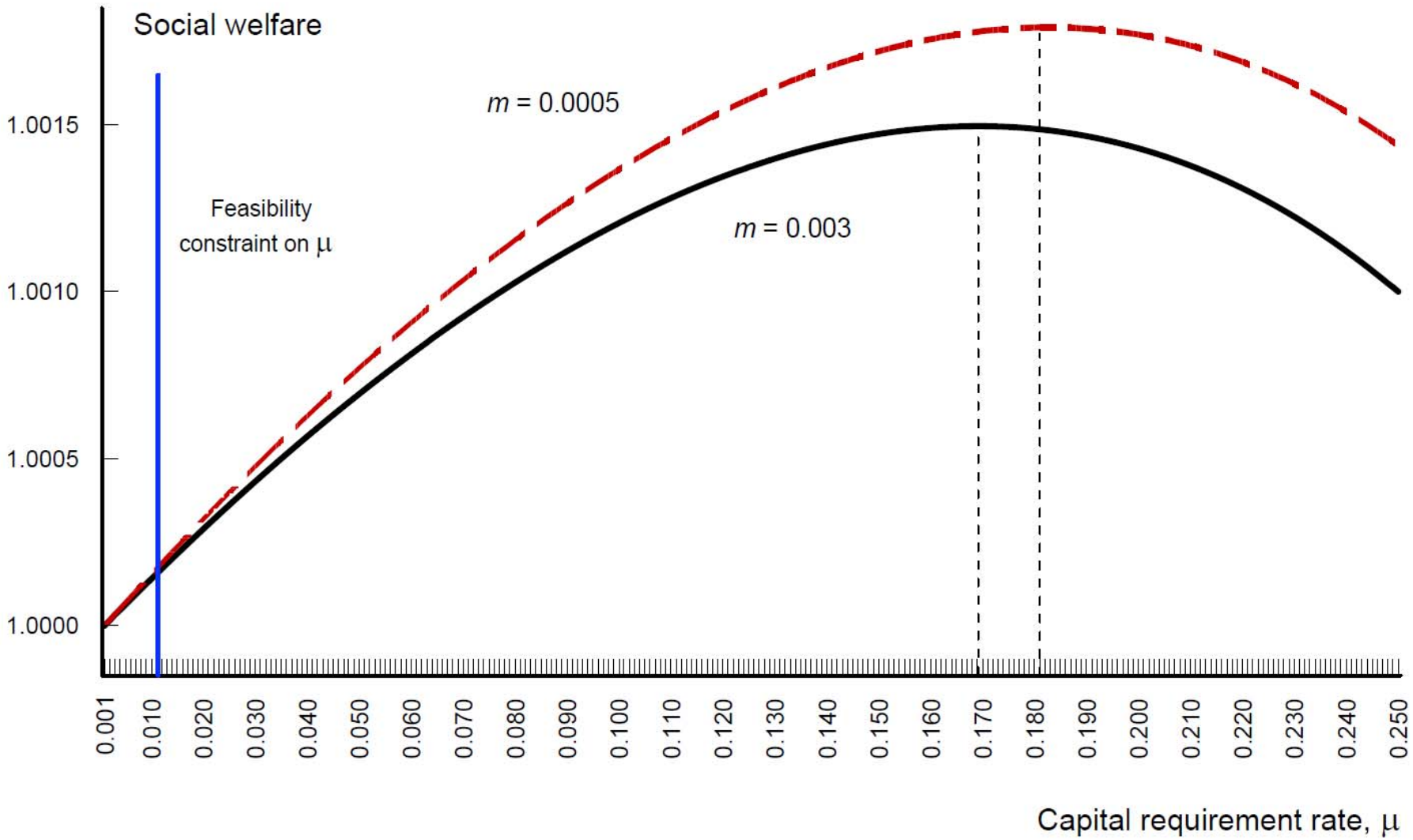
- Two possible outcomes.

- $\mu^* |_{l_t^R=0} > \tilde{\mu}$: feasibility constraint not binding; regulator can select the welfare-maximizing value even if financial stability is the main consideration. There is a **welfare gain**.

- $\mu^* |_{l_t^R=0} < \tilde{\mu}$: feasibility constraint binding; and welfare is not maximized; ensuring financial stability always entails a **welfare loss**.

- Basic calibration: no trade-off; higher ε: welfare loss.

Welfare and Optimal Capital Adequacy Ratio (Safe-Loan Equilibrium)



Note: Social welfare is normalized by the initial value of welfare for $\mu = 0.001$.

Policy Implications

- Fundamental roles of capital regulation: mitigate the moral hazard (or excessive risk-taking) induced by limited liability and government guarantees.

- The higher CaRs are, the more banks internalize social cost of risk, due to more “skin in the game.”

- But although there is a risk-reducing effect of CaRs, it may be achieved at the cost of restricting bank lending, which may hamper growth and reduce welfare.

- Difficult trade-off for the regulator.

- Model: to mitigate incentives for banks to engage in risky activities, regulator may set the CaR ratio at a level that is too high compared to its socially optimal value.

- Depends on the economy's structural parameters.

- Model did not account for possibility that optimal μ may be so high that it fosters **disintermediation**.

- Need to strengthen perimeter of regulation and financial sector supervision.