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Eurosistema

OPTIMAL REGULATION OF CREDIT LINES

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The views presented here do not necessarily represent those of the Bank of Spain or the Eurosystem.

Introduction

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⇒ This paper provides a normative analysis of CLs

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- Parties optimally agree on the CL contractual terms (prices + pre-arranged funding)

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3. I discuss the implementation of the constrained-efficient allocation
   → It can be implemented using a minimum requirement on pre-arranged funding
4. I examine the main determinants of the regulatory requirement
   → It should go up when the costs of maintaining liquidity buffers are lower, the costs of liquidating firms are higher, or high liquidity need states occur more frequently

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OUTLINE

1. Introduction
2. Model
3. Equilibrium Analysis
4. Social welfare analysis
5. Conclusions

OUTLINE

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3. **Investors** demand $R + \delta$ ($\delta \geq 0$) and $R > 1$ at date 2 for E and D, respectively

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  - $\rightarrow$ α: Firms' demand for liquidity
- Aggregate uncertainty
  - $\rightarrow$ $\alpha \sim g(\cdot)$ is publicly revealed at $t = 1$
  - $\rightarrow$ $g(\cdot)$ is known when contracting at $t = 0$

Firms (II)

- At $t = 2$, the firm produces a cash flow

$$\tilde{x} = \begin{cases} X, & \text{if not liquidated,} \\ Q(z), & \text{if liquidated,} \end{cases}$$

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- Payoffs can be be derived from a model of debt overhang w/ a secondary market for specialized assets

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- Contractual terms B, f, and E are determined by competition at $t = 0$

The Allocation Problem

- In high liquidity need states, α may be unfeasible to meet: $D < \alpha - E$
  - $\rightarrow$ The bank randomly reneges on some CLs
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  - $\rightarrow$ The bank randomly reneges on some CLs
  - $\rightarrow$ Firms in need of cash are liquidated
- (Junior) pre-arranged funding E helps to sustain lending over a wider range of α's
  - $\rightarrow$ Claims associated to E can be diluted to raise additional funds at $t = 1$
  - $\rightarrow$ Yet, pre-arranged funding E demands a higher return

OUTLINE

The representative bank's problem:

- **Given aggregate liquidations $z(\alpha)$**, the expected payoff of the representative firm is maximized subject to
  1. The participation constraint of investors who provide E

Solving for the unregulated CL contract

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$(+)$ Symmetric eq. can fully characterize the unregulated CL (B^U, f^U, E^U)

The representative bank's problem

Given aggregate liquidations $z(\alpha)$, the representative bank maximizes

$$\max_{B,f,E} \int_0^{\underline{\alpha}} \Big((1-\alpha)(X-f)+\alpha(X-B)\Big)g(\alpha)\mathrm{d}\alpha + \int_{\underline{\alpha}}^1 \Big((1-\alpha)(X-f)+\alpha(\frac{L}{\alpha}(X-B)+(1-\frac{L}{\alpha})Q(z))\Big)g(\alpha)\mathrm{d}\alpha,$$

subject to the initial investors' participation constraint

$$(R+\delta)E = \int_0^{\underline{\alpha}} \Big(\alpha B + (1-\alpha)f - R(\alpha - E)\Big)g(\alpha)\mathrm{d}\alpha. \tag{PC}$$

Def.: Equilibrium

Unregulated CL contract

- Trade-off of increasing E:
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- Are liquidations in high liquidity need states due to partial insurance efficient?

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Solving for the constrained efficient CL contract

The social planner's problem:

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- Socially desirable to increase $E > E^U$

Appendix 1

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  - $\rightarrow$ A higher liquidation value is obtained if a liquidity need is not covered

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   - → High requirements can make CLs excessively costly
   - → Low requirements can have null impact on welfare

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Appendix

Definition: Symmetric laissez-faire equilibrium

It consists of a choice (B^U, f^U, E^U) for the representative bank and aggregate liquidations $z^U(\alpha)$ such that

1. Given $z^U(\alpha)$, (B^U, f^U, E^U) solves the bank's optimization problem, that is,

$$\max_{B,f,E} V(B, f, E)$$

   subject to the participation constraint (PC) of initial investors.

2. Given (B^U, f^U, E^U), aggregate liquidations are computed as $z^U(\alpha) = \alpha - L \quad \forall\alpha$, where

$$L = \begin{cases} \alpha, & \text{if } \alpha \leq \underline{\alpha}, \\ \dfrac{RE^U + (1-\alpha)f^U}{R - B^U}, & \text{if } \alpha > \underline{\alpha}. \end{cases}$$

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Effect of the regulatory requirement on welfare

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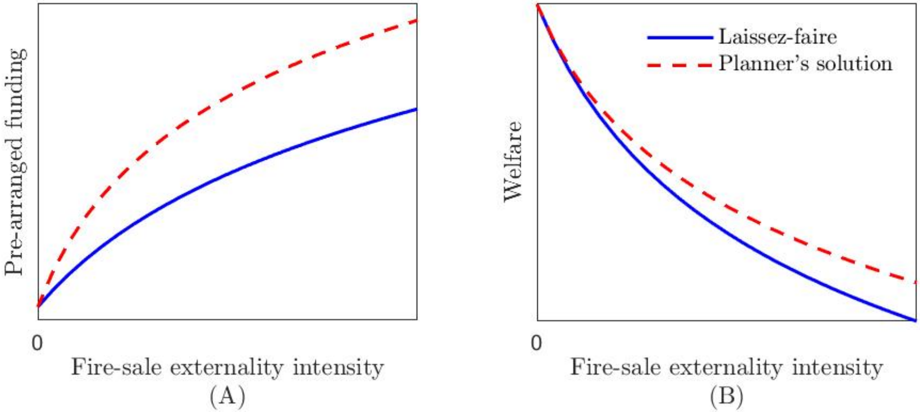

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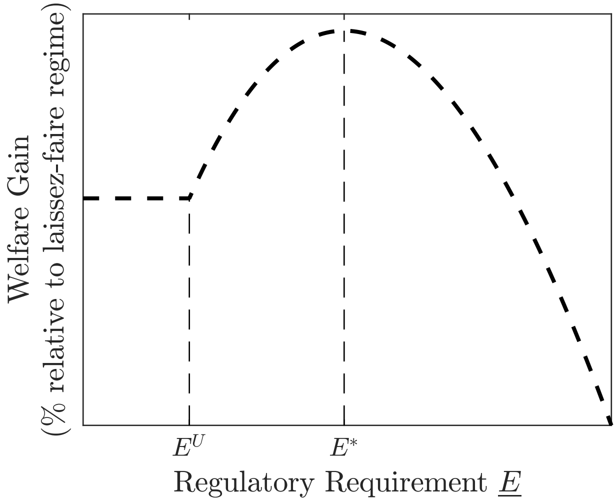

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