Banking on the Edge: Liquidity Constraints and Illiquid Asset Risk

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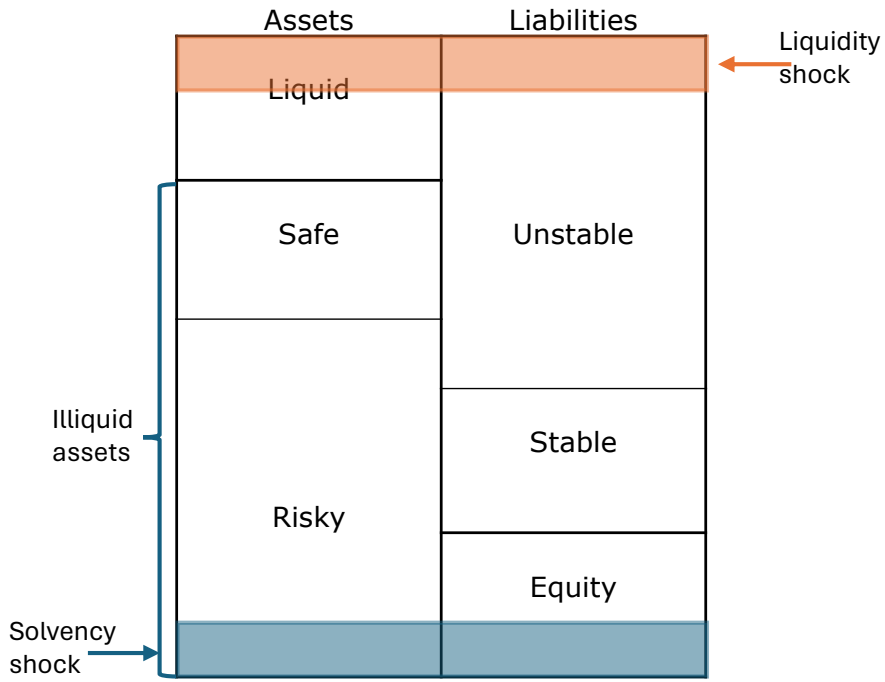
This Paper: Banks' Risk-Taking Response to Liquidity Requirements

This paper: the effect of **liquidity regulation** (Liquidity Coverage Ratio) on banks' **risk-taking** incentives.

- Liquidity regulation (LCR) requires: Liquid/Unstable > threshold
- Solvency regulation requires: Equity/Risky > threshold*
- Largest US banks subject to LCR
  → how do they respond in their illiquid asset portfolio allocation?



Main result: bank risk-taking response to LCR depends on its reliance on unstable funding.

One Main Result

Dependent: $Y_{ift} = risk_{ft} * relationship_{ift}$ (syndicated loan market)

- $risk_{ft}$: stock return volatility or Altman z-score of the firm
- sample restricted to $relationship_{ift} = 1$

$$Y_{ift} = \beta_1 LCR_i \times Post_t + \beta_2 LCR_i \times Post_t \times Stable_{it} + ... + \psi_i + \rho_{j(f)t} + \delta X_{ift-1} + \varepsilon_{ift}$$

Prediction: $\beta_2 > 0$.

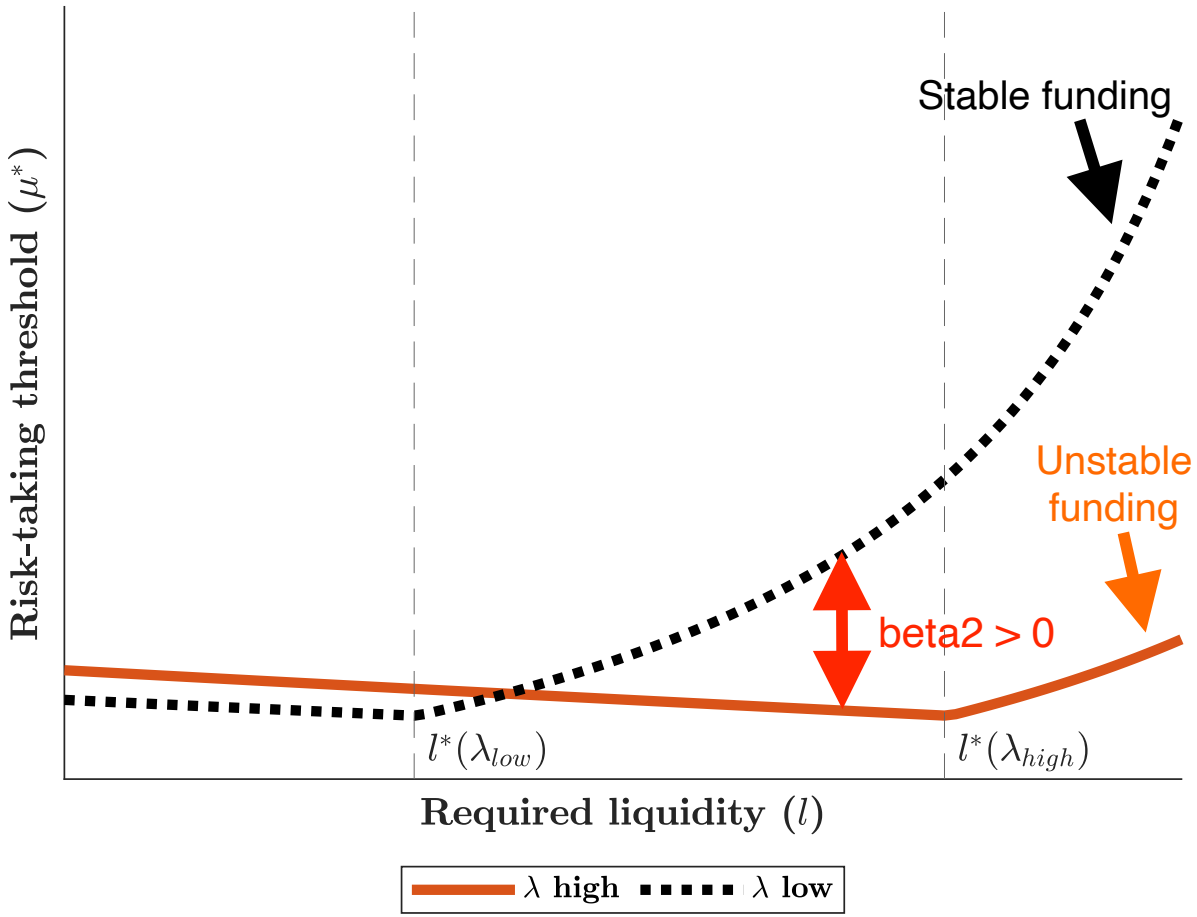
	(1) Baseline	(2) + controls	(3) + funding	(4) 100% LCR	(5) Fix date
LCR × Post	0.111	0.008	-0.527	-0.420***	-0.128
	(1.26)	(0.04)	(-1.68)	(-3.38)	(-1.52)
LCR × Post × Ins. bonds/liab.			0.440**	0.267***	0.147**
			(2.49)	(3.76)	(2.72)
LCR × Ins. bonds/liab.			-0.122	-0.344	
			(-0.62)	(-1.41)	
Post × Ins. bonds/liab.			-0.507***	-0.233***	-0.146**
			(-3.03)	(-5.11)	(-2.70)
Ins. bonds/liab.			0.212	0.190*	
			(1.63)	(2.07)	
Observations	3,948	3,467	3,467	3,467	3,383
R^2	0.550	0.632	0.633	0.633	0.633
Controls	No	Yes	Yes	Yes	Yes
Industry-quarter FE	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes

One Main Result: mapping with the model

Dependent: $Y_{ift} = risk_{ft} * relationship_{ift}$

$$Y_{ift} = \beta_1 LCR_i \times Post_t + \beta_2 LCR_i \times Post_t \times Stable_{it} + ... + \psi_i + \rho_{j(f)t} + \delta X_{ift-1} + \varepsilon_{ift}$$

Prediction: $\beta_2 > 0$.



My Comments

This paper shows evidence of a differential risk-taking response to liquidity requirements (LCR) for banks replying more on stable funding (long-term debt).

Comment 1: Empirical Strategy

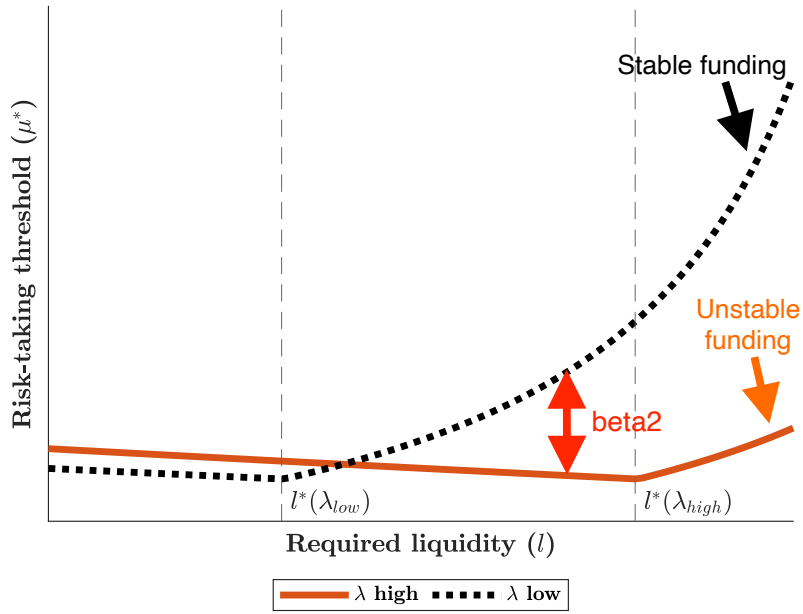
- 1a: Mapping with the model
- 1b: Instrumented difference-in-differences analysis?

Comment 2: Role of equity

Comment 3: Risk-taking vs. monetary policy in the model

Comment 1a: Empirical Strategy - Mapping with the Model

How banks respond to a higher liquidity requirement $\Delta l > 0$? When l is low, safe assets "substitute" liquid assets in the liquidity-shock state.



Empirically: $Y_{ift} = \beta_1 LCR_i \times Post_t + \beta_2 LCR_i \times Post_t \times Exp_i + ... + \varepsilon_{ift}$,
where Exp_i is the exposure of the bank to the treatment: $Exp_i = f(l_i, \lambda_i)$.
For example:

$$Exp_i = \max(0, \left[LCR\,threshold_i - \frac{Liquid_i}{Unstable_i} \right])$$

In the paper: $Exp_i = Stable_i$ (hence $\beta_2 > 0$).

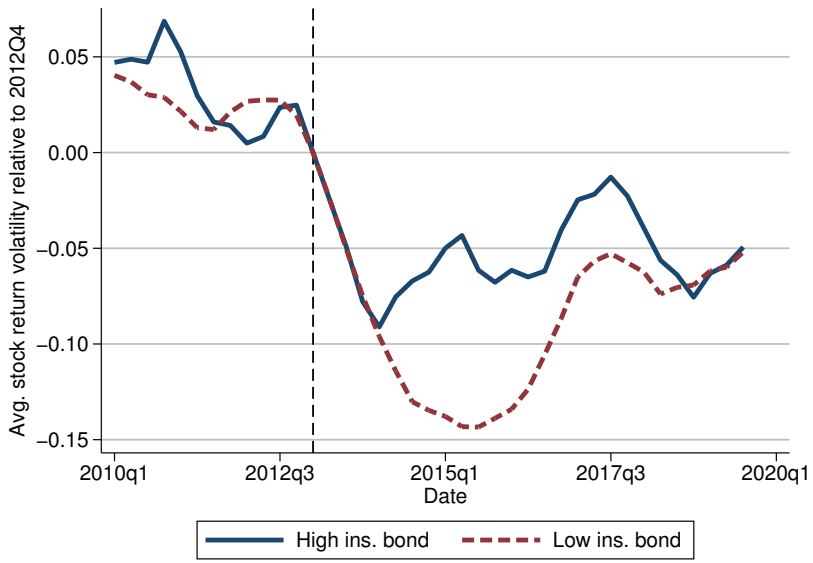
Comment 1b: Empirical Strategy - Instrumented DiD

$$Y_{ift} = \beta_1 LCR_i \times Post_t + \beta_2 LCR_i \times Post_t \times Stable_i + ... + \varepsilon_{ift}$$

In the paper: $Stable_i$ is the share of bank bonds held by insurance companies.

- LCR treatment is endogenously assigned (based on size)
- Suggestion: use exogenous demand for bank bonds by insurers as an instrument for the LCR treatment
- Example of returns to schooling in Indonesia (Duflo, 2001)

LATE estimation among LCR-affected banks (fig 9):



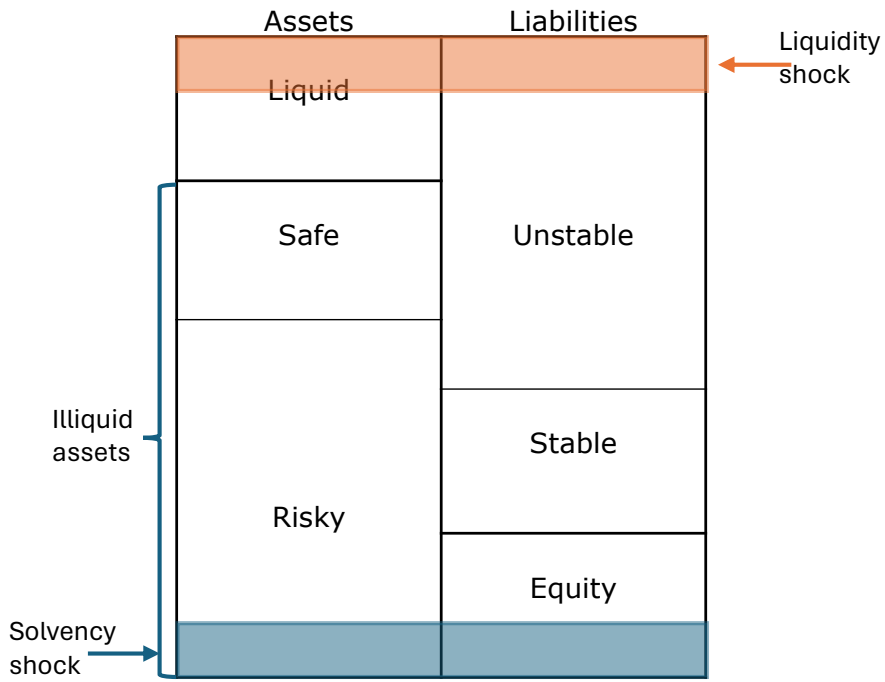
Exclusion restriction: bank bond holdings by insurance companies only affect bank risk-taking through the LCR treatment. See identification assumptions (Angrist and Imbens, 1995).

Comment 2: Role of Equity

Role of bank capitalization in the response to the LCR treatment:

$$Y_{ift} = \beta_1 LCR_i \times Post_t + \beta_2 LCR_i \times Post_t \times Equity_i + ... + \varepsilon_{ift}$$

- Liquidity shock: bank might need to sell illiquid assets
- Loss due to liquidation costs absorbed by equity
- Bank runs based on the strength of the bank's fundamentals.
- Interaction between capital and liquidity regulation (Carletti, Leonello, Goldstein).



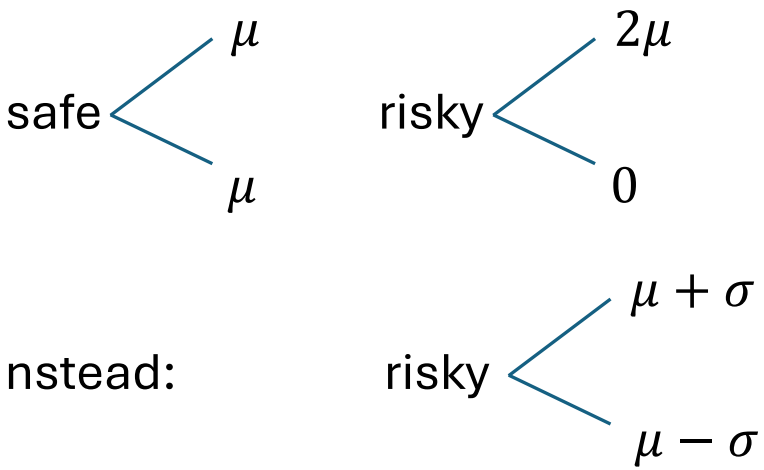
Comment 3: Risk-Taking vs. Monetary Policy

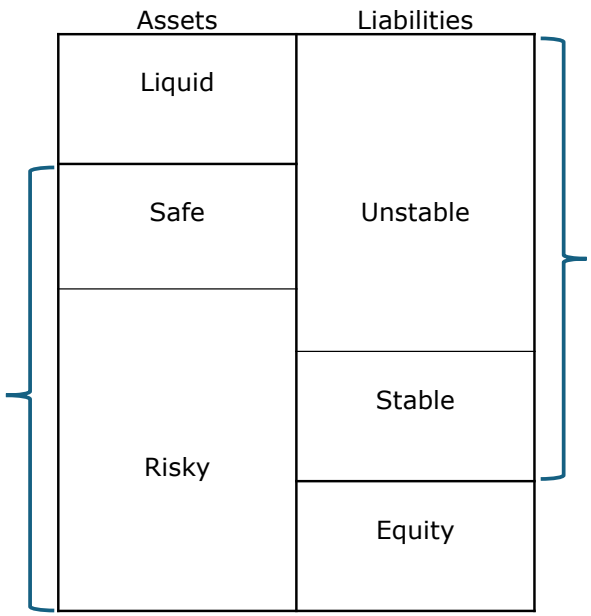
Model has 3 types of assets: liquid, illiquid safe, and illiquid risky.

Safe and risky assets have the same expected payoff $= \mu$.

Comparative statics: risk-taking (μ^*) as a function of liquid assets l. But changing μ moves both the mean and the variance of expected payoffs.

Interpretation of μ: risk-free rate, related to the slope of the yield curve?





Suggestion: capture risk with another parameter (σ).

Summary

This paper shows evidence of a differential risk-taking response to liquidity requirements (LCR) for banks replying more on stable funding (long-term debt).

- When I is low, safe assets "substitute" liquid assets in the liquidity-shock state.
- With low exposure to the treatment (stable funding), banks can take more risk.

Comment 1: Empirical Strategy

- 1a: Mapping with the model and definition of an "exposure to the treatment"
- 1b: Use exogenous variation in unstable funding as instrument for the LCR treatment

Comment 2: Role of equity

- Interaction between capital and liquidity

Comment 3: Disentangling risk-taking vs. monetary policy in the model