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Market Procyclicality and Systemic Risk

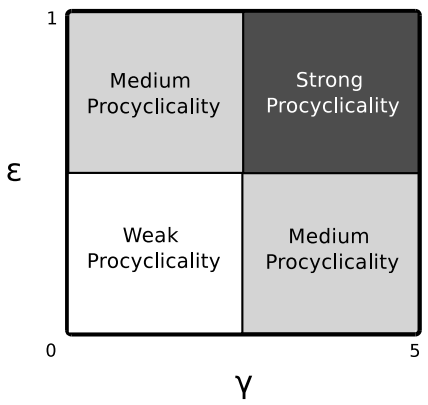
Interplay of Procyclical Capital Requirements and Market liquidity

Intro

After the recent U.S. financial crisis (2007-2009) a debate has developed regarding the appropriate policy instruments to use to mitigate the procyclical effects arising from the interplay between **leverage** and **mark-to-market** asset valuation.

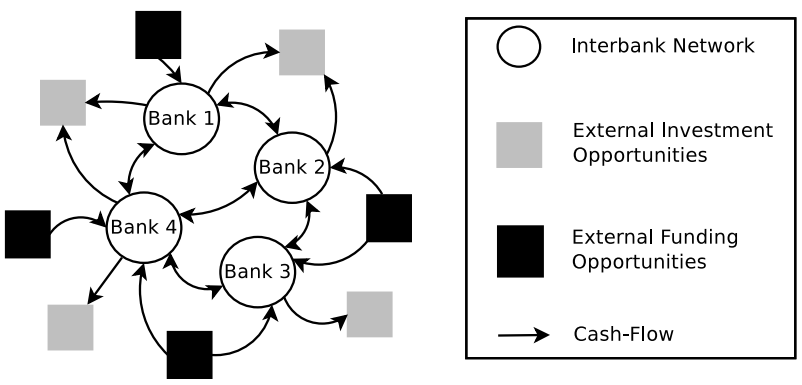
Research Question

The **Table of Market Procyclicality**. How the risk of systemic default depends on the interaction between: (1) level of bank compliance with capital requirements (ε) and (2) asset market liquidity ($1/\gamma$), in the presence of an unexpected common price shock.

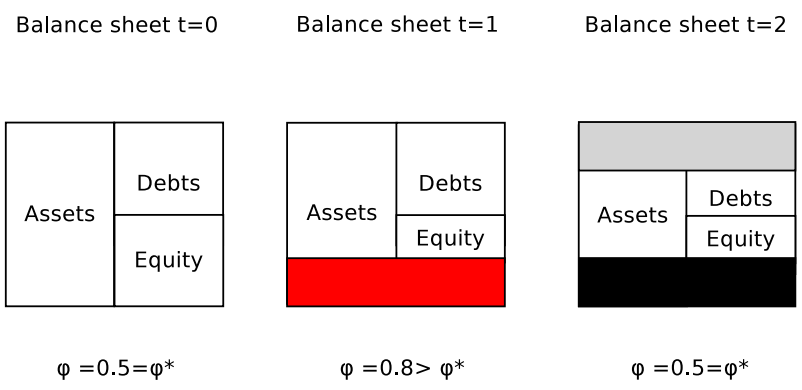


Methods

We combine a balance sheet approach with a dynamic stochastic framework:

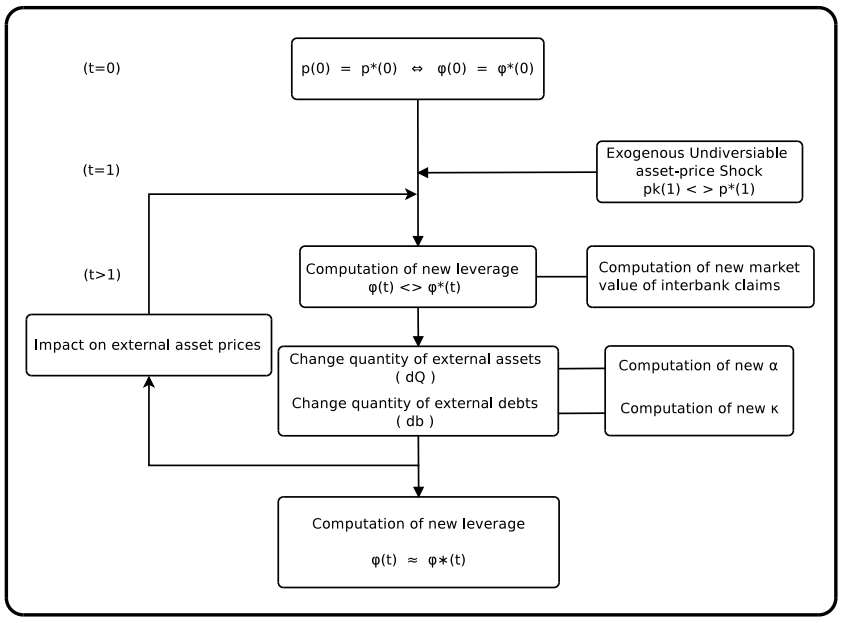


We derive an accounting rule whereby banks sell or buy external assets in response to price movements:



Prices have a stochastic dynamics with returns influenced by bank-trades. The combination of: balance-sheet management and the price response generates a **positive feedback loop** between leverage and prices that may amplify the effects of common shocks into a spiral of asset price devaluation or over-valuation.

Leverage-Price Cycle



$t = 0$ The leverage $\phi(0)$ is set equal to the target level ϕ^*;

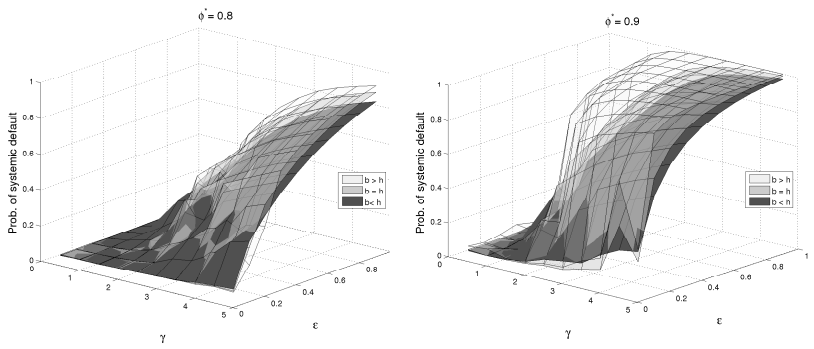
$t = 1$ The perturbation of the system with an initial aggregate price shock deviates $\phi(0)$ from ϕ^*.

$t \geq 1$ Banks react by buying assets if the shock is positive and by selling assets if the shock is negative ($\Longrightarrow$ re-sizing of banks' balance sheets);

$t > 1$ The probability of systemic default is analyzed in critical regions of the table of market procyclicality.

Results

(1) A strong compliance with capital requirements, usually alleged to be procyclical, **does not increase systemic risk** unless the asset market is illiquid. (2) When the asset market is illiquid, even a weak compliance with capital requirements **increases significantly systemic risk**.



Conclusions

Policy makers should employ **macro-prudential** supervisory risk assessment policies in coordination with **monetary policies** to compensate for the effect of market-wide liquidity in the presence of aggregate shocks.

References

Tasca P., Battiston S., Market Procyclicality and Systemic Risk. ETH Risk Center Working Paper Series ETH-RC-12-012, (2012) Submitted.

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