

# A Pigovian Approach to Liquidity Regulation

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# Liquidity runs spread losses

- Bad assets cause shocks, but their propagation depends on funding fragility
- The shorter term is funding, the faster fire sales
- The recent crisis was a wholesale (and repo) run
- Repo boom boosted securitized and HLT loans
- Then escaped quickly, bearing no losses
  - Prepackaged wholesale for rapid exit
  - New bankruptcy privileges allowed to front run others

# Trade off in Short Term Bank Funding

- Allows banks to expand credit beyond deposits
- Potentially unstable funding
- Each bank's funding has impact on vulnerability of other banks, but this is not internalized
- So, private choice of liquidity risk is excessive
- Liquidity risk becomes systemic
- Optimal regulation may use prices or quantity depending on market response elasticity (Weizman 1974).

# Controlling Liquidity Risk

- Basel III proposed liquidity buffers, net funding ratios; now branded as too expensive
- Complementary tool: Pigovian tax on short-term funding (Perotti Suarez, February 2009)
- Optimal regulation depends on market response
- Response depends on bank lending and funding choices, thus on heterogeneity of banks
- Perotti Suarez (2010): Depending on source of heterogeneity, the efficient regulation requires Pigovian taxes, ratios or a combination of both.

# Assessing market response

Banks vary in

- Quality of investment opportunities
  - Banks with better projects wish to lend more
- Solvency incentives
  - Undercapitalized banks, falling charter value
  - Overconfident managers
  - They want to gamble as downside risk shifted to public safety net
- We analyze effect of each separately

# A benchmark model

- Single round of funding and credit decisions.
- Continuum of banks varying along two dimensions  $\theta_i$ .
  - $\theta_1$  reflects bank credit quality
  - $\theta_2$  reflects bank's solvency incentives
- Bank owners choose ST funding  $x(\theta)$  on basis of own  $\theta$ s.
- The NPV value of lending is increasing in  $\theta_1$ , decreasing in lending volume.
- Aggregate liquidity risk rises in total ST funding

# Liquidity buffers

- Liquidity buffers least efficient
  - Cause disadvantage for better lenders
  - Net liquidity risk unchanged
    - When net liquidity costly, they work as a tax
    - But tax level is procyclical !
  - Stable incentives require adjusting buffers to risk spreads
  - Main net result is subsidy to Treasury bills at cost of funding cost for banks

# Results

- When banks differ in quality of credit opportunities
- A Pigovian tax to increase opportunity costs of short term borrowing is optimal
- Aligns private and social liquidity costs
  
- Here, liquidity ratios are distortionary: the better banks become constrained, the other expand inefficiently
  
- When banks differ in risk-shifting incentives
- Limits on short term debt (net funding ratio) best
- Banks which prefer to gamble (low charter value, overconfident bankers) are not constrained by levies, their credit volume must be contained



# Buffers are a bad idea

- Liquidity ratios (fractional buffers) are always dominated
  - 1) If there is no spread between liquid assets and bank borrowing they are ineffective, and banks simply scale up borrowing
  - 2) If the spread is positive, they work as indirect taxes, provided they are adjusted over time
  - 3) If the spread is pro cyclical, buffers are also procyclical
  - 4) They do subsidize safe assets

# Ratios AND Levies

- Optimal to combine funding ratios and liquidity levies if both bank traits diffused
- However, if capital regulation takes proper care of risk-shifting incentives (as they are supposed to), levies on ST funding dominate net funding ratios
- In any case: we have ratios in place, but no liquidity levy yet.

# Summary

Quantity instruments (capital ratios, net funding ratios) best to contain gamblers

Price tools (eg liquidity charges) increase opportunity costs of strategies with externality effects

Liquidity levies easier to adjust than ratios, easier to use for preventive goals

# Levies as flexible macroprudential rules

- Funding ratios as automatic stabilizers may offer commitment, but harder to adjust
- Buffers highly procyclical (via their shadow price)
- Liquidity risk levies most flexible
  - More appropriate in the build-up of risk creation: less effective when many banks compromised
  - Low adjustment costs
  - Allows smooth, differentiated response as each bank can choose how much to adjust

# Aims of liquidity charges

1. Raise opportunity cost of credit growth in good times
2. Banks shift to longer term funding
3. Stop arbitrage on deposit insurance
4. Collect revenues to pay for crises
5. Quality of credit would improve once longer term lenders bear some risk

# Forward looking bank taxes

- New proposals (UK, Germany) target uninsured wholesale funding (as in Obama's proposal)
- Higher rates charged for short term funding
- Claims up to one year maturity taxed either at half rate, or exempted
- An even shorter maturity bracket would have been better, but huge data problem
- Bank resistance to disclose funding maturity
  - Supervisors did not even track repo volumes

# How can we improve the tax base ?

- Risk of tax avoiding innovations
- Does not include shadow banks
- **Solution: tax the bankruptcy privileges**
  - Offers a clear, legally identified tax base
  - Cannot be avoided by relocating transactions
  - Covers any intermediary (unlike Basel III)

# Bankruptcy exceptions

- Repos, derivatives obtained strong privileges in 2002-2005
- Allow seizing collateral upon default, no stay
  - This fed the final repo acceleration (2005-2007)
- Exceptions offer a strong pledge which allows more credit for illiquid firms, dilutes other lenders
  - Repossession of collateral enables to front run all others and shift losses
  - Accelerates fire sales



# Systemic risk contribution of repos and derivatives

- Privileges designed for immediate contingent liquidity
  - Smart lenders after 2005 switched to derivative deals
  - Sudden cash need explains the rushed AIG bailout
- Exceptions were (are) not well understood
  - In 2008 they contributed to uncertainty over counterparty risk
  - Poor information on repo exposure, most derivatives neither cleared nor disclosed !
- A privilege which increases risk for all should be taxed
  - Tuckman (2010): limit safe harbor privileges to cleared, reported trades

# How valuable are these privileges ?

- Novel proprietary rights
- Create a privilege for some lenders, violating two key principles in bankruptcy:
- Automatic stay: blocks secured creditors from seizing collateral (to avoid disruption, value loss)
  - BE accelerate sale of collateral (fire sales), front-running
- Prohibition of cross-default clauses
  - Cross-default clauses in all derivative contracts. Although equivalent to insurance policies, insurers prevented from terminating a policy when a company files for bankruptcy.

# Maturity transformation ?

- Retail deposits insured to protect basic liquidity needs
- Why insure the shadow banking system ?
- Implies losing control over money supply
  - Any private sector security can be repo-ed !
  - Risk shifting, not maturity transformation
- Even modest charges would discourage pure gambling (carry trades)