

Liquidity, Solvency and Stability

by

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(revised Monday, Sep 2, 2019 for Chapman Conference, September 6,
2019)

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A The Financial Crisis of 2007–09

- **Enormously disruptive**
- **Has increased focus on financial stability and regulatory reform.**
- **Financial Stability is of great interest because financial crises have significant real effects.***

* See Thakor, “The Financial Crisis of 2007-09: Why Did it Happen and What Did We Learn?” *Review of Corporate Finance Studies*, September 2015.

Motivation



- **Real Effects**

- *Luttrell, Atkinson, and Rosenblum (2013).*
- Financial crisis of 2007–09 cost the U.S. an estimated 40%-90% one year's output: \$6-\$14 trillion.
 - \$50,000-\$120,000 for every U.S. household.
- Cost including human capital and PV of future wage income: \$15-\$30 trillion (100%-190% of 2007 U.S. output).

Motivation

- **There is considerable empirical evidence that high pre-crisis leverage (insufficient capital) in banking and among consumers were major factors in contributing to and sustaining this crisis.**

Bottom Line:

The belief that this high leverage along with a drying up of liquidity caused the crisis has led to post-crisis regulation that has emphasized both capital and liquidity requirements.

Motivation: Capital can Help

- *Gauthier, Lehar and Souissi, (Journal of Financial Intermediation, 2012)* find (using a structural model that is calibrated using banking data) that a properly-designed capital requirement can reduce the probability of a systemic crisis by 25%.
- Consistent with the endogeneity of systemic risk in the paper above... Research shows that ...
 - a. Highly correlated asset choices by banks (during 2000-06, correlated risk-taking grew - - - Bhattacharyya and Purnanandam (2011) document that idiosyncratic risk in commercial banking was cut in half and systematic risk doubled during this time).
 - This interconnectedness of banks raises likelihood of idiosyncratic shocks becoming systematic.

Capital can Help

- There is a theory that higher leverage (lower capital) in individual banks increases *systemic* risk (consistent with crisis experience)...

Acharya, Viral and Anjan Thakor, “The Dark Side of Liquidity Creation: Leverage-Induced Systemic Risk and Implications for the Lender of Last Resort”, *JFI*, October 2016.

More bank capital potentially valuable...But bankers dislike higher capital requirements

Why?

Standard banker view

Pfleiderer (2012) quotes Josef Ackermann, CEO of Deutsche Bank from a November 20, 2009 interview: “More equity might increase the stability of banks. At the same time, however, it would restrict their ability to provide loans to the rest of the economy. This reduces growth and has negative effects for all.”

This Aversion to Capital is Even Stronger Among European Banks

The Economist (1-18-2014) talks about how European banks resisted the new 3% leverage ratio under Basel III and got the new rules watered down (e.g., allowing some assets to be excluded from leverage ratio calculations):

“The full extent of the new change is difficult to gauge...yet a rough calculation suggests that they [new leverage requirements] have been loosened just enough to allow most big European banks to pass the 3% test. Without the committee’s help, as many as three quarters of Europe’s big banks might have failed this test”.

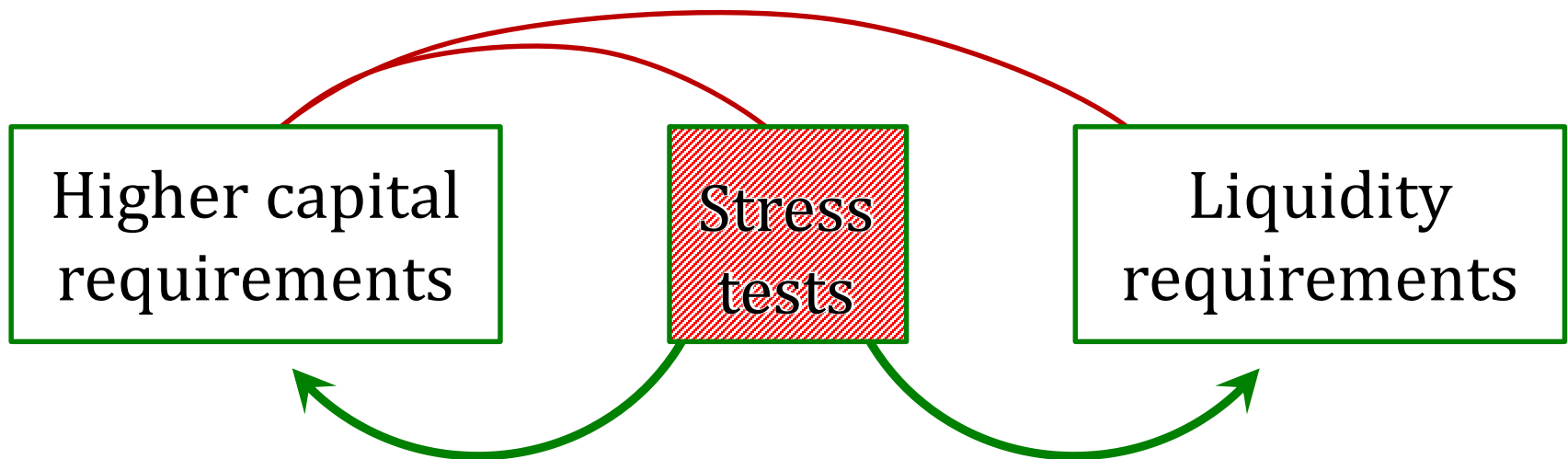
“Bankers also claim that tough leverage requirements risk stemming the flow of credit to the economy, as banks shrink their balance sheets to comply. BNP Paribas, a French bank, says this would particularly disadvantage European banks...”

IMPACT OF HIGHER CAPITAL REQUIREMENTS

- **Popular reason for not raising capital requirements: it will increase price of bank credit, reduce lending and lower growth.**
- **Recent evidence by Bichsel et al (“ The Pass-Through of Bank Cap. Requirements to Corp. Lending Spreads” WP, 2019): 1% point increase in RWA cap req > lending spreads increase by 0 -5 bp; 5-20 bp increase for similar leverage ratio increase. Higher capital banks increase spreads *less*.**

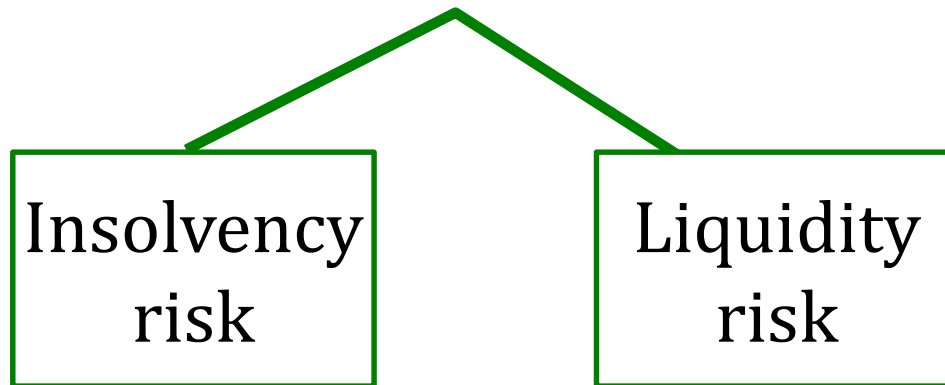
B Liquidity or Insolvency Risk Crisis?

- Post-crisis regulatory reforms have focused on:



- *Reference: Thakor, Anjan, “Post-crisis Regulatory Reform in Banking: Address Insolvency Risk, Not Illiquidity”, JFS, 2018.*

- **Is the post-crisis focus on both liquidity and capital requirements optimal, given the twin objectives of economic growth and financial stability?**
- **Answer depends on what you believe caused the financial crisis.**



Definitions

- ***Insolvency Crisis:*** Counterparty risk crisis—investors refuse to extend financing to institutions because they view the credit risk of the institution as being excessive, given their asset portfolios and capital structures.
 - ⇒ insolvency leads to illiquidity



Definitions

- **Liquidity Crisis:** For some exogenous reason, liquidity evaporates so investors pull their money out (e.g., may be due to a coordination failure—sunspots), so institutions reliant on short-term debt experience funding declines \Rightarrow fire sales of assets \Rightarrow insolvency.



- **Given that one kind of risk can generate the other kind of risk, why do we care which risk was the underlying cause of the crisis?**

Because...

- (i) It affects (*ex post*) regulatory interventions during the crisis;
- (ii) It affects (*ex ante*) regulations put in place before the next crisis.

- **The stroke analogy...**

An Important Point

- **Insolvency risk** is bank-specific—affects only highly-leveraged banks with poor-quality assets and heightened asset portfolio risk.
- **Liquidity risk** indiscriminately affects *all* banks, regardless of fundamental financial health

Insolvency Risk View

↓ **Asset prices due to adverse shock to fundamentals.**

- ⇒ Equity values of banks fall, and they fall more for more highly-leveraged banks.
- ⇒ Debt overhang.
- ⇒ Banks have diminished borrowing capacity (nobody wants to lend to insolvent institutions and shareholders don't want to put in more equity with debt overhang— Finance 101!).
- ⇒ Liquidity dries up!

Solution: High capital requirements that provide better *ex ante* asset choice incentives and also reduce *ex post* impact on adverse-asset value shocks in creating debt overhang.

Liquidity Risk View

- **Sunspot shock leads to withdrawals by investors.**
 - ⇒ Banks can't renew short-term debt (liquidity freeze)
 - ⇒ Sell assets at fire-sale prices
 - ⇒ *All* banks experience lower asset values.
 - ⇒ Insolvency!

Solution: Liquidity Requirements.

What Does the Evidence Say?

① **If this was a liquidity crisis, it should have caused funding to dry up for all institutions.**

■ **Did it?**

■ **No!**

- Proponents of the liquidity crisis view propose the notion that the whole market suffered from a liquidity crunch.
- However, recent empirical evidence disputes this view.
 - Perignon, Thesmar and Vuillemeys (*JF*, 2018)
 - : Transaction-level data on ST unsecured CDs in Europe during 2008–14 → many banks suffered funding dry-ups, but ...
 - Banks with higher capital (and better future performance) actually *increased* their ST uninsured funding, and ...
 - Banks with lower capital (and poorer future performance) reduced funding.
 - ⇒ REALLOCATION OF LIQUIDITY BASED ON SOLVENCY
 - Boyson, Helwege and Jindra (FM, 2014)
 - : Similar evidence for U.S. banks

② Empirical evidence that massive withdrawals from MMFs during 2008...

But...Kaeperczyk and Schnabl (2013, *QJE*) document that these withdrawals were due to asset risk and insolvency concerns—investors found out that MMFs did not invest only in safe assets (as previously thought).

③ Banks with higher capital ratios:

- were more likely to survive the crisis and gained market share during the crisis (Berger and Bouwman (*JFE*, 2013));
- took less risk prior to the crisis (Beltratti and Stulz (*JFE*, 2012)); and
- had smaller contractions in lending during the crisis (Carlson, et al., (*JFI*, 2013)).

④ Movements in market spreads during crisis also suggest this was an insolvency risk crisis, *not* a liquidity crisis.

- **Many believe that 2007–09 was a liquidity crisis.**
- **Fed’s initial interventions all suggested the belief that it was a liquidity crisis.**
 - Provision of short-term liquidity to banks and other FIs
 - Provision of liquidity directly to borrowers and investors in key credit markets
 - Expansion of open market operations to support functioning of credit markets
- **But these initiatives did not work. Taylor and Williams (2009) evidence—LIBOR-OIS spread actually went up after these interventions!**

- **Taylor and Williams (2009) : evidence that LIBOR-OIS spread was highly positively correlated with unsecured-secured spread suggests that LIBOR-OIS spread was driven mainly by default risk (not liquidity) concerns.**
 - **Regulatory intervention that eventually worked was the Fed addressing counterparty risk— by injecting more equity capital into banks (see Thakor, RCFS, 2015).**
 - + Dong and Wen (2017, WP) → calibration of model to match U.S. aggregate output fluctuations and bond premia.
- ⇒ They conclude that quality, not liquidity, of private assets (mortgages and MBS) was responsible for the crisis.**

C. Effects of Capital and Liquidity Requirements

■ Bank capital and Value: Mehran and Thakor (*RFS*, 2011):

- i. Total bank value and the bank's equity capital are positively correlated in the cross-section
- ii. The various components of bank value in an acquisitions context are also positively related to bank capital.

Calibrating Optimal Capital Requirements:

Miles, Yang and Marcheggiano (*Economic Journal*, March 2013) develop a structural model in which they take into account the expected benefit of bank capital in reducing the probability of a crisis as well as tax benefits of bank debt, and estimate that the optimal capital requirement should be 20% of RWA, which may be a leverage ratio of 7% to 10%.

Summary

■ Thus, more highly-capitalized banks:

- lend more and create more liquidity (Berger-Bouwman, RFS, 2009);
- are safer and more likely to survive a financial crisis (Berger-Bouwman, JFE, 2013);
- take less risk in normal times and screen loans better;
- contract lending less during crises (Perignon et al, JF. 2018);
- create more value for their shareholders(Mehran-Thakor, RFS, 2011);
- maintain/increase access to short-term funding (liquidity) during periods of stress;
- create less systemic risk; and
- deliver higher risk-adjusted returns to their shareholders.

Effects of Higher Liquidity Requirements

■ Higher liquidity requirements:

➔ Freeze loanable funds into immobility.

⇒ Sacrifices economic growth... (Goodhart's analogy)
(e.g., in 2016, J.P. Morgan Chase held \$524 billion in
“eligible” liquid securities against a deposit base of
\$1.38 trillion). **Curfman and Kendrac WP, 2019:**

**causal evidence that HQLA reduces bank credit supply
and bank profits.**

➔ Don't distinguish between globally systemically important
banks (G-SIBs) and non-GSIBs.

⇒ Lending distortion not limited to only large,
systemically-important banks.

■ **Barosso, et al WP (2017) ⇒ higher reserve requirements in Brazil reduced their banks' credit supply**

⇒ Substitutes role of LOLR with liquidity kept in banks ⇒ **inefficient** (see Allen-Gale theories of how interbank market for liquidity trading does not resolve inefficiencies)!

D Post-Crisis Regulatory Reform

① *Increase capital requirements:*

- But do it gradually via dividend freezes and earnings retentions.

⇒ Eric Rosengren (2010) observation:

Starting August 2007, the LIBOR rose and the LIBOR-OIS spread spiked significantly.

But ... dividends on common stock declared by the largest banks (e.g., 19 SCAP) increased in 4th Q 2007 and hit a peak in Fall 2008.

⇒ Rosengren says...

“This suggests that if dividends had been halted at the SCAP banks once the LIBOR rate rose, nearly \$80 billion would have been retained as capital. This represents close to 50% of the CPP funds used to recapitalize these banks in the Fall of 2008. Clearly a proactive approach to dividend retention could have substantially reduced the need for an emergency infusion of public funds”

② Reduce liquidity requirements.

- Let the LOLR do its (Bagehot Rule) job!

③ Restrict consumer leverage and increase consumer literacy

- Jagannathan, Kapoor and Schaumburg (*JFI* 2013): per capital U.S. household consumption grew steadily at \$1994/year during 1980–99, and then increased quite dramatically to \$2849/year from 2001–07.

④ Improve Governance and Culture:

- Governance is affected by culture, and culture is shaped by “higher purpose”.
- What is the “higher purpose” of a bank?
- A new topic

Concluding Remarks

- 2007–09 was an insolvency risk crisis, NOT a liquidity crisis.
- Post-crisis regulatory reform should focus on:
 - ➔ Higher capital requirements
 - ➔ Lower or *no* liquidity requirements
 - ➔ Restricting consumer leverage
 - ➔ Improving financial literacy
 - ➔ Focusing on bank culture

