Thoughts on a New Financial Architecture

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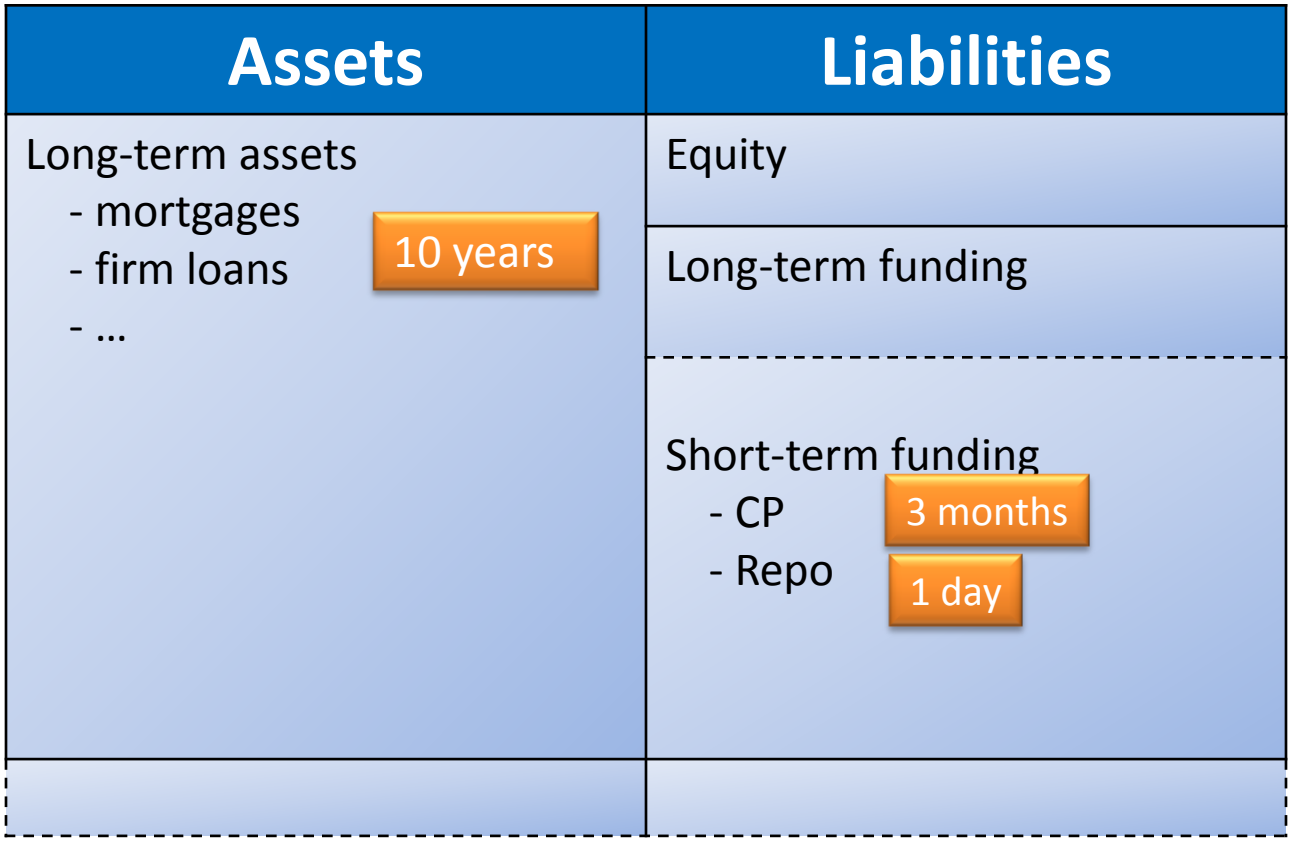
Overview

- What went wrong?
- What are the challenges?
- How can we improve the financial architecture?
  - 10 point plan
  - …

Before the crisis …

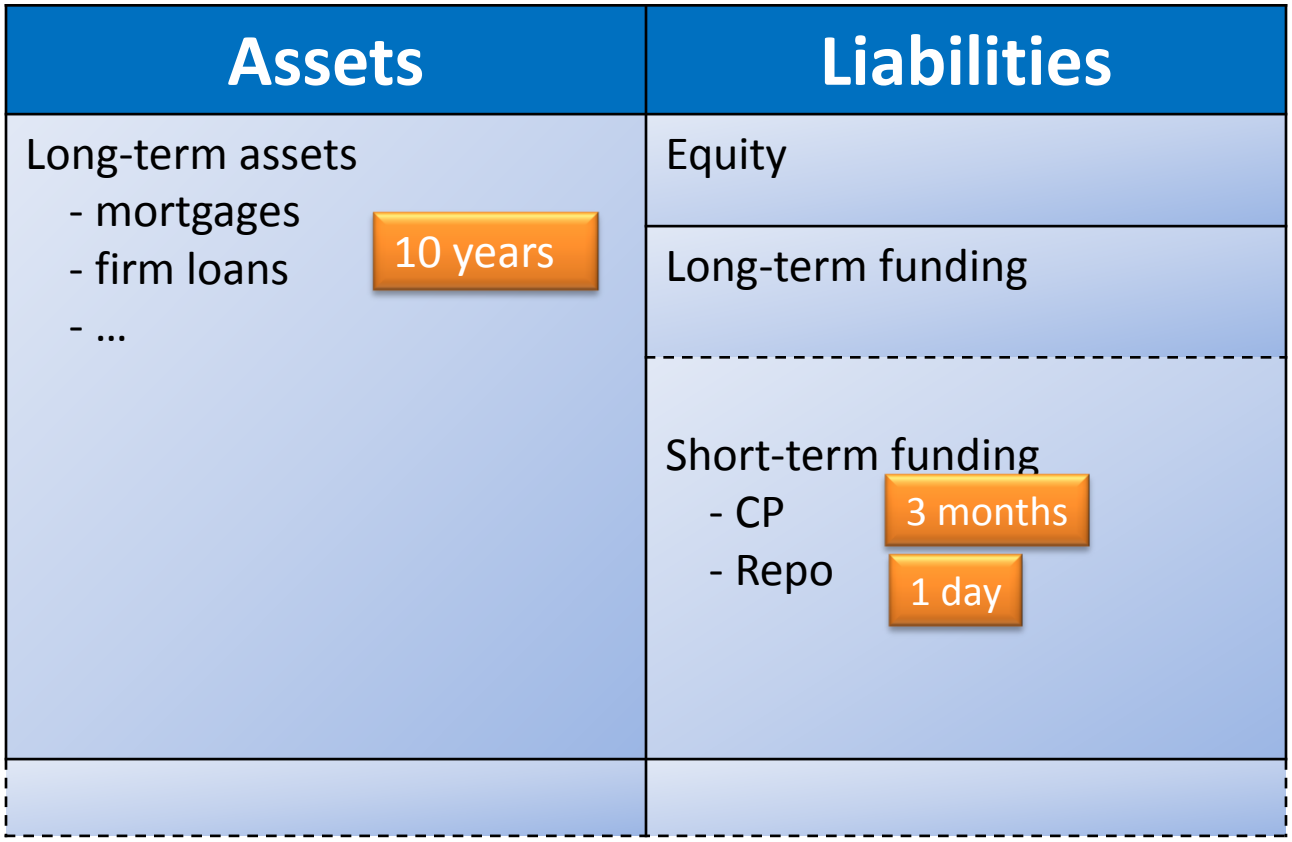
1. Capital Inflow from Asia
   - Build up US$ reserves – lessons from SE-Asia 97/8
   - Export-friendly exchange rate
2. Lax interest policy that ignores bubbles
   - Deflationary threat after bursting of internet bubble
3. Originate and distribute banking model
   - Lax lending standards
   - Regulatory arbitrage

1. Rate-race: Savers' prefer short-term



- Rat race
  - I can withdraw funds before others if bank is in trouble
  - …
- Lower inflation risk
- (Incentivizes CEOs, preference shocks)

1. Rate-race: Savers' prefer short-term



- Consequence: short-term financing and rolling over of debt by
  - banks
  - SIVs (off-balance sheets) …
- is much cheaper than equity financing (equity financing has stigma)

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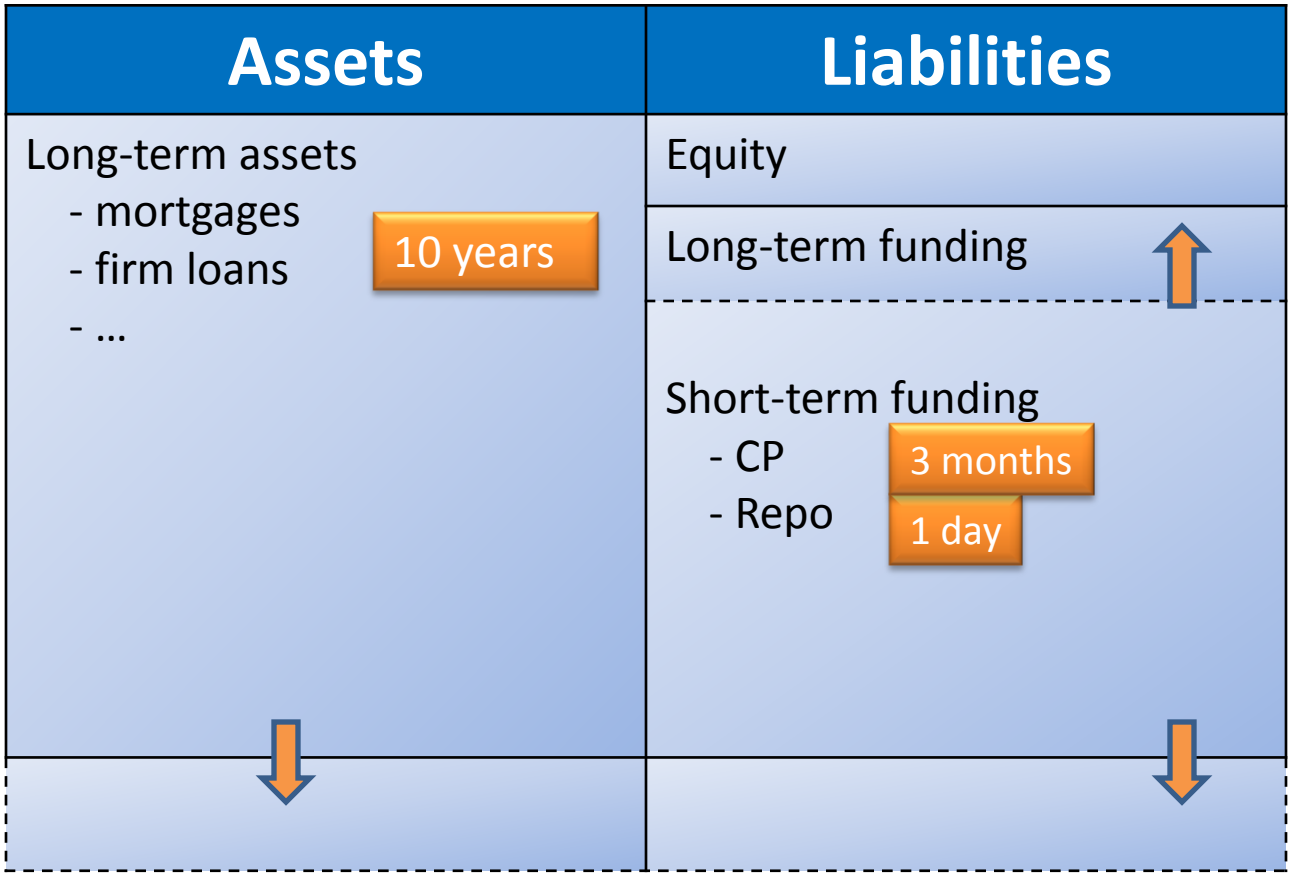

Before the crisis

- More and more short-term funding
- Roll over short-term funding liquidity every day!

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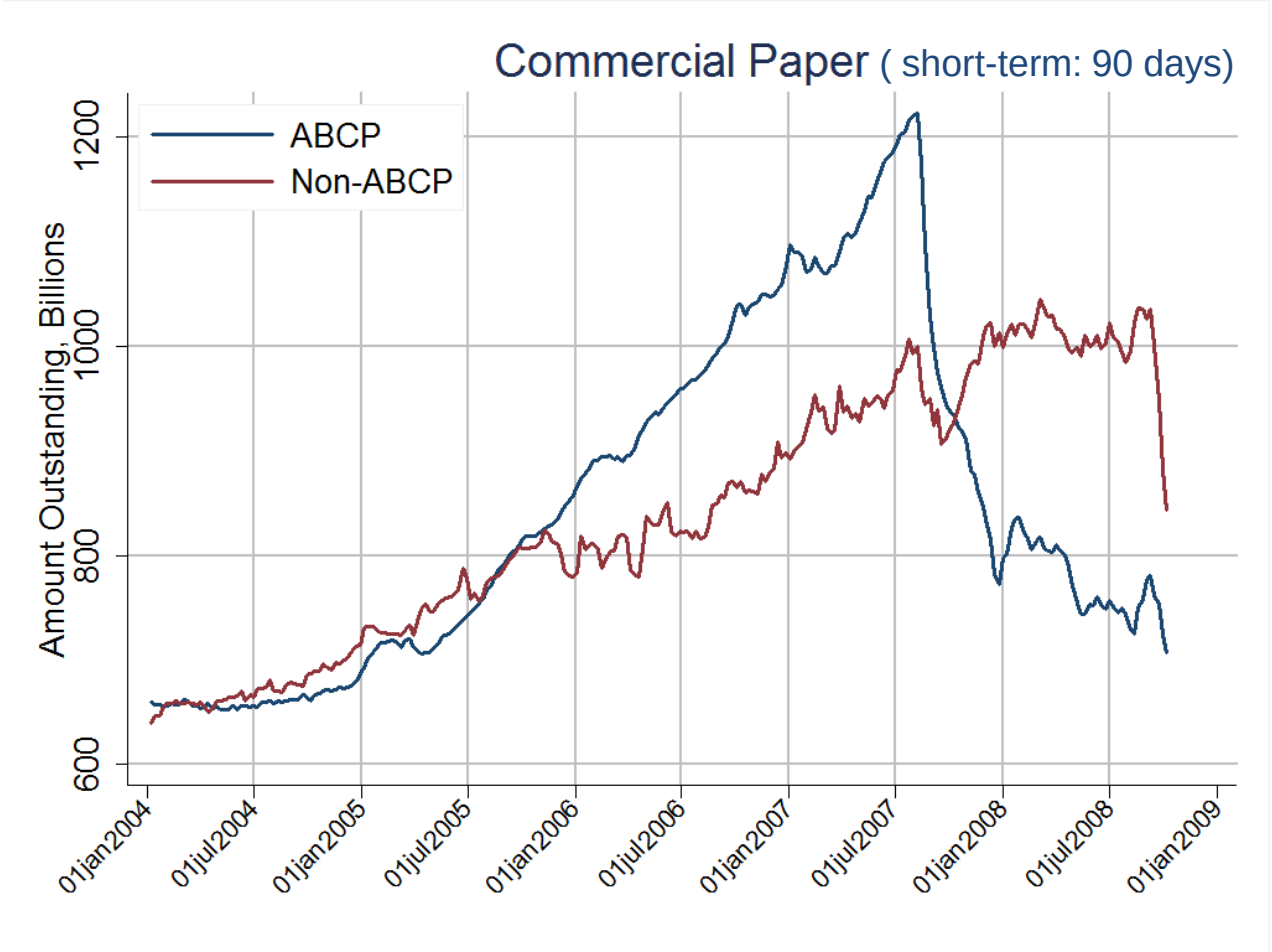
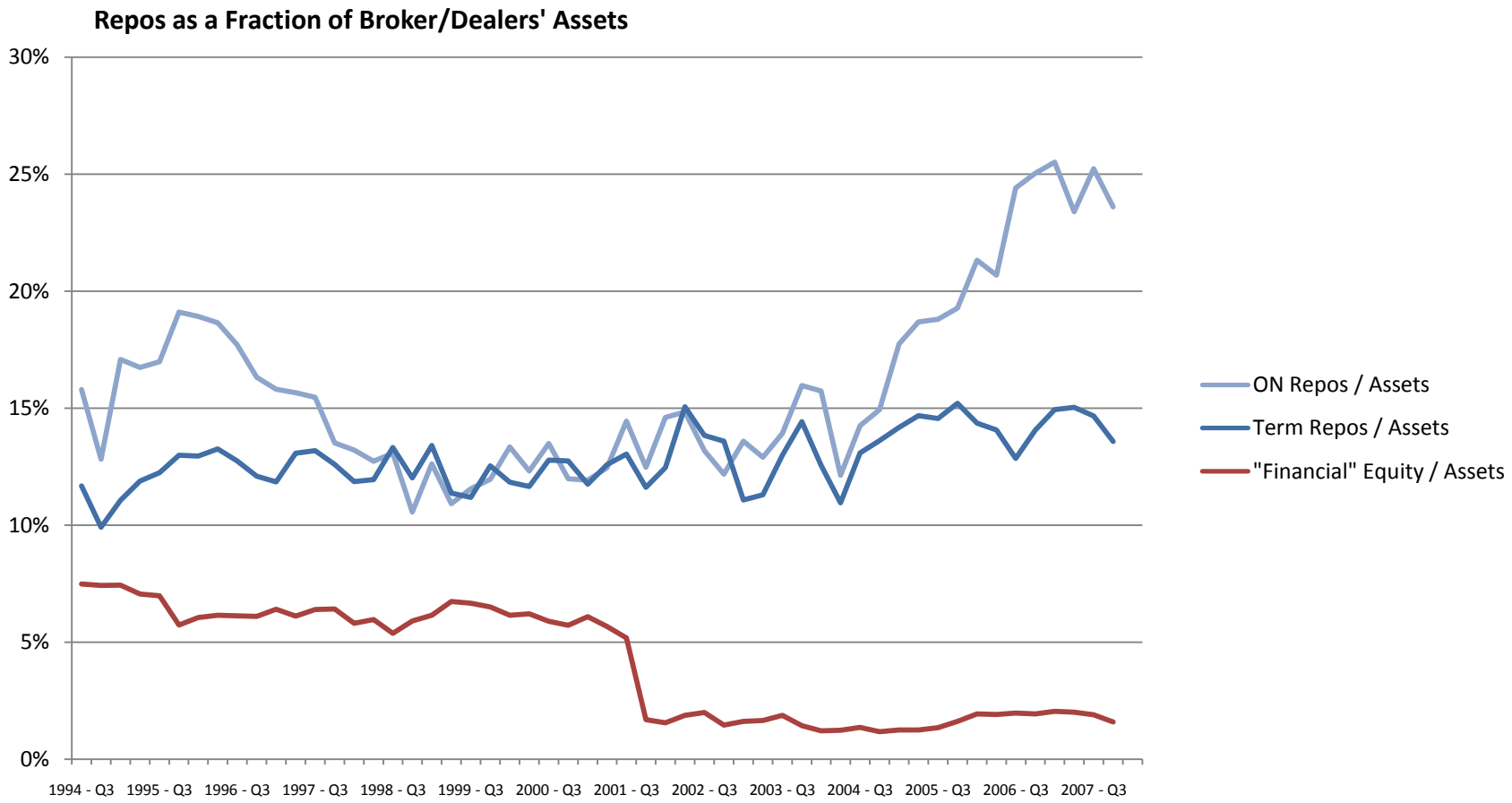


1. Challenge: Roll over ¼ every night

Overnight-Repos (short-term: 1 day)



Imagine you have to refinance 20 % of your mortgage every day

Lesson 1: Maturity Mismatch

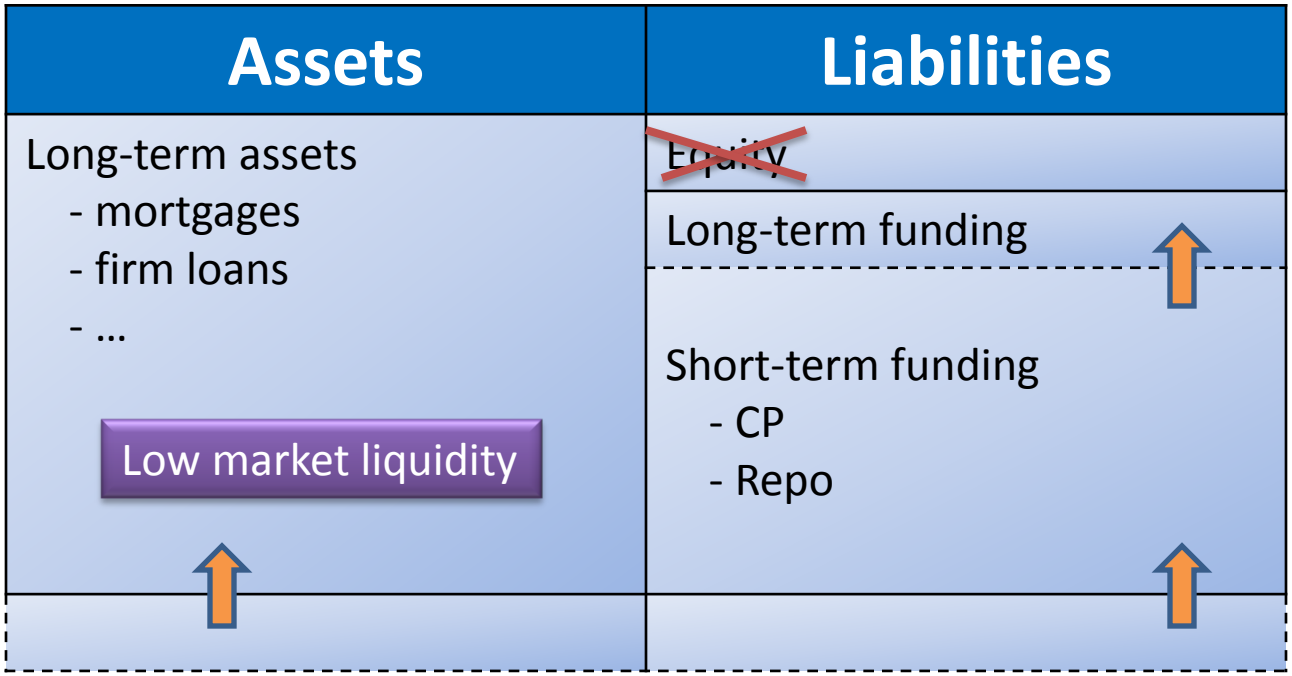
- Capital ratio/leverage ratios do not capture the aspect that overnight borrowing became so prominent

⇒ Shift focus to

  - Maturity mismatch
  - Market liquidity of assets

- Should very short-term withdrawal in certain retirement accounts be prohibited to avoid savers' rat race phenomena?

2a. "Fire-sale externality" – too big to fail



- subprime crisis hits
- equity shrinks, volatility increases
- short-term financing is harder to obtain

  No roll over (since margins/haircut widen)

⇒ Sell assets at fire-sale prices

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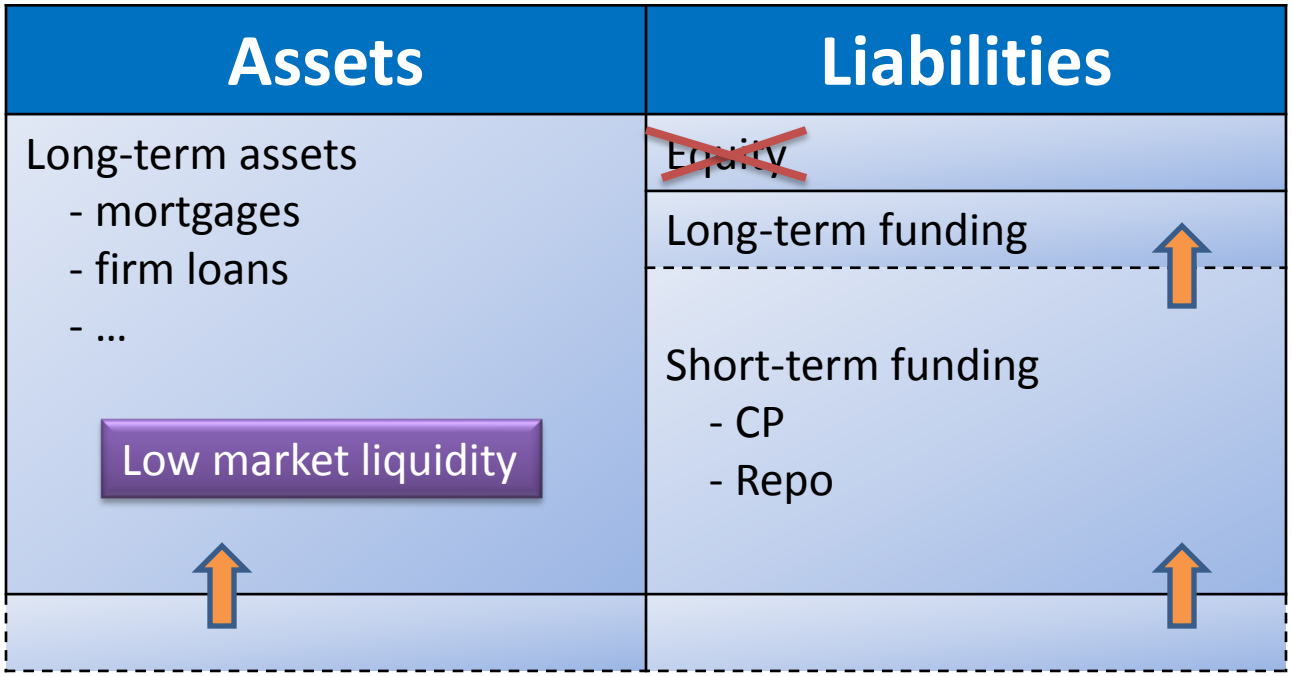

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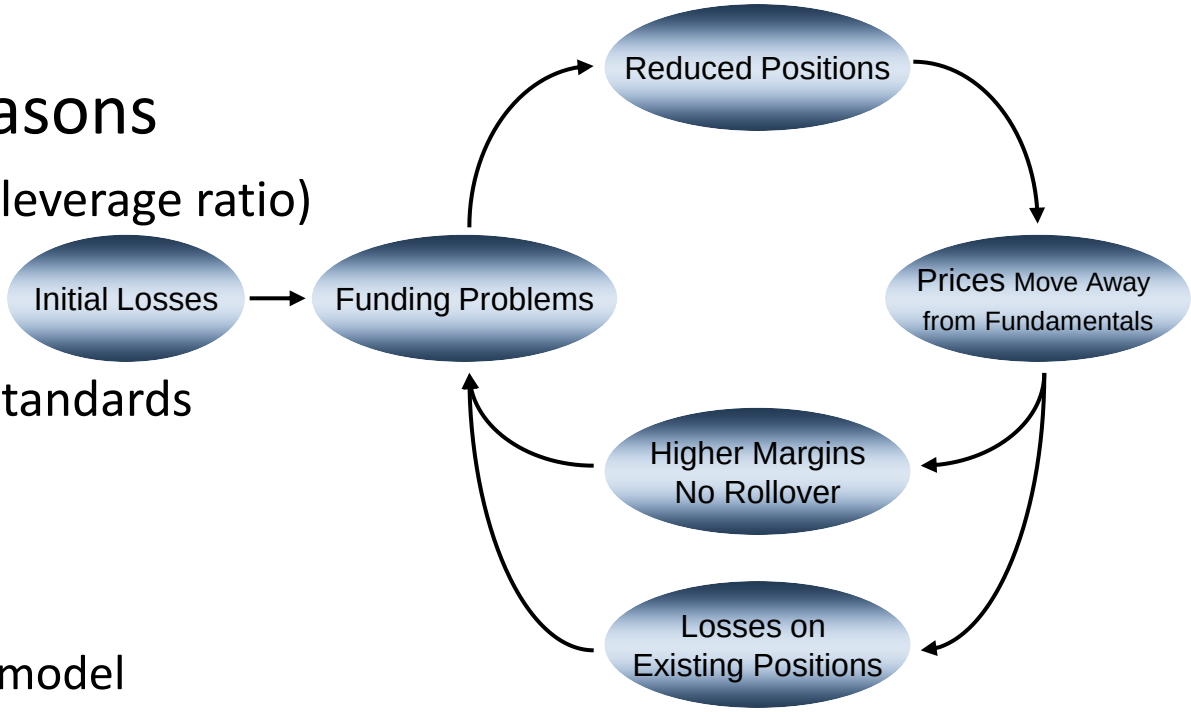
2a. The 2 "Liquidity Spirals"

- Loss spiral
  - Net wealth > α x for asym. info reasons
  - (constant or increasing leverage ratio)
- Margin spiral
  - toughening of lending standards
  - (forces to delever)



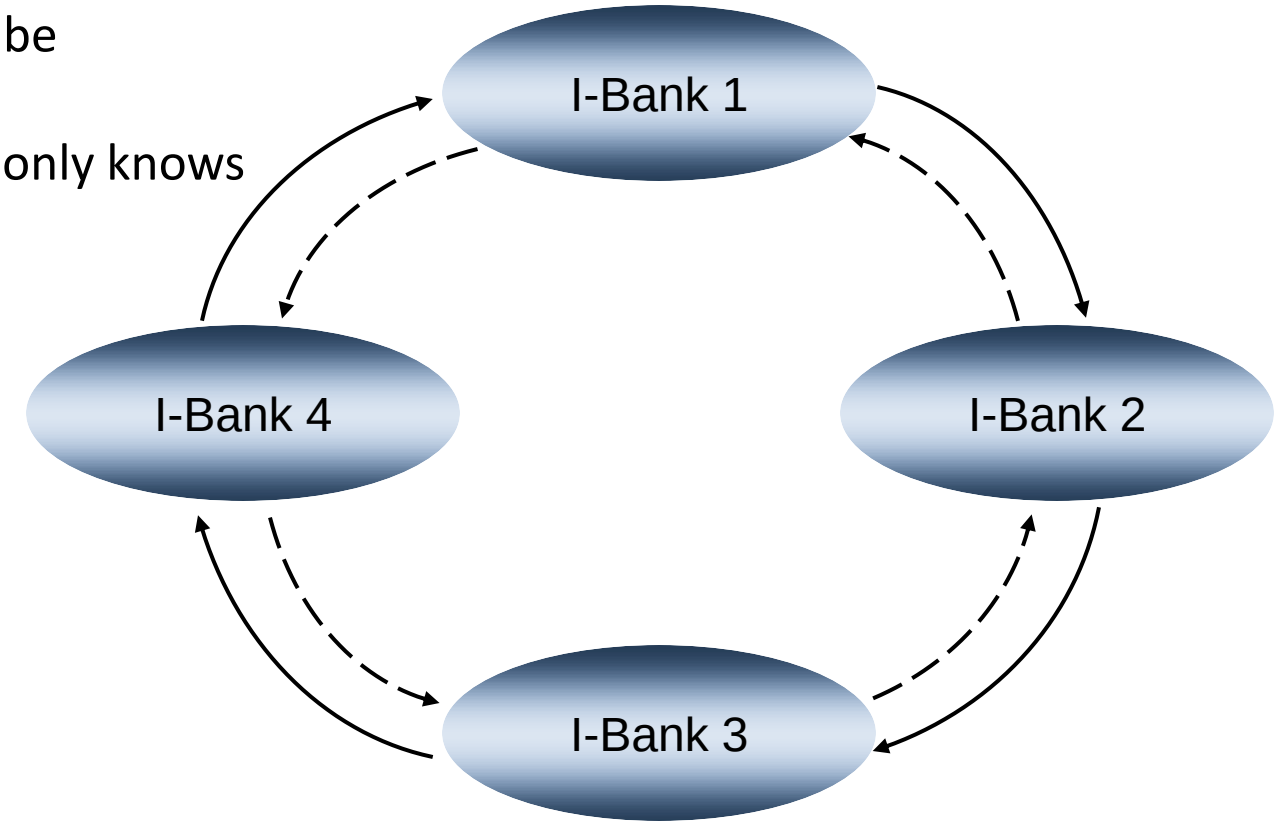
- Mark-to-market vs. mark-to-model
  - worsens loss spiral
  - improves margin spiral

Source: Brunnermeier & Pedersen (2007)

• Both spirals reinforce each other

2b. Network Externality – too interconnected to fail

- CDS Example:
  - Everything can be netted out
  - But each party only knows his obligations



2. Externality

- Fire-sale Externality – too big to fail
  - Own maturity mismatch affects fire-sale price of others
- Network Externality – too interconnected to fail
  - Take on opaque connected position adversely affects others

- Response to current regulation

  "hang on to others and take positions that drag others down when you are in trouble" (maximize bailout probability)

  - *Become big*
  - *Become interconnected*

    e.g. CDS contracts include features that cause large ripple effects

Lesson 2 (cross-section)

- For Capital/Liquidity regulation
  - Replace existing risk measures, like Value-at-Risk (VaR) that focus on individual banks with
  - Risk measures like CoVaR that captures risk spillovers across banks
    - Favors small, less connected banks
    - See Adrian-Brunnermeier (2008)

Lesson 2 (cross-section)

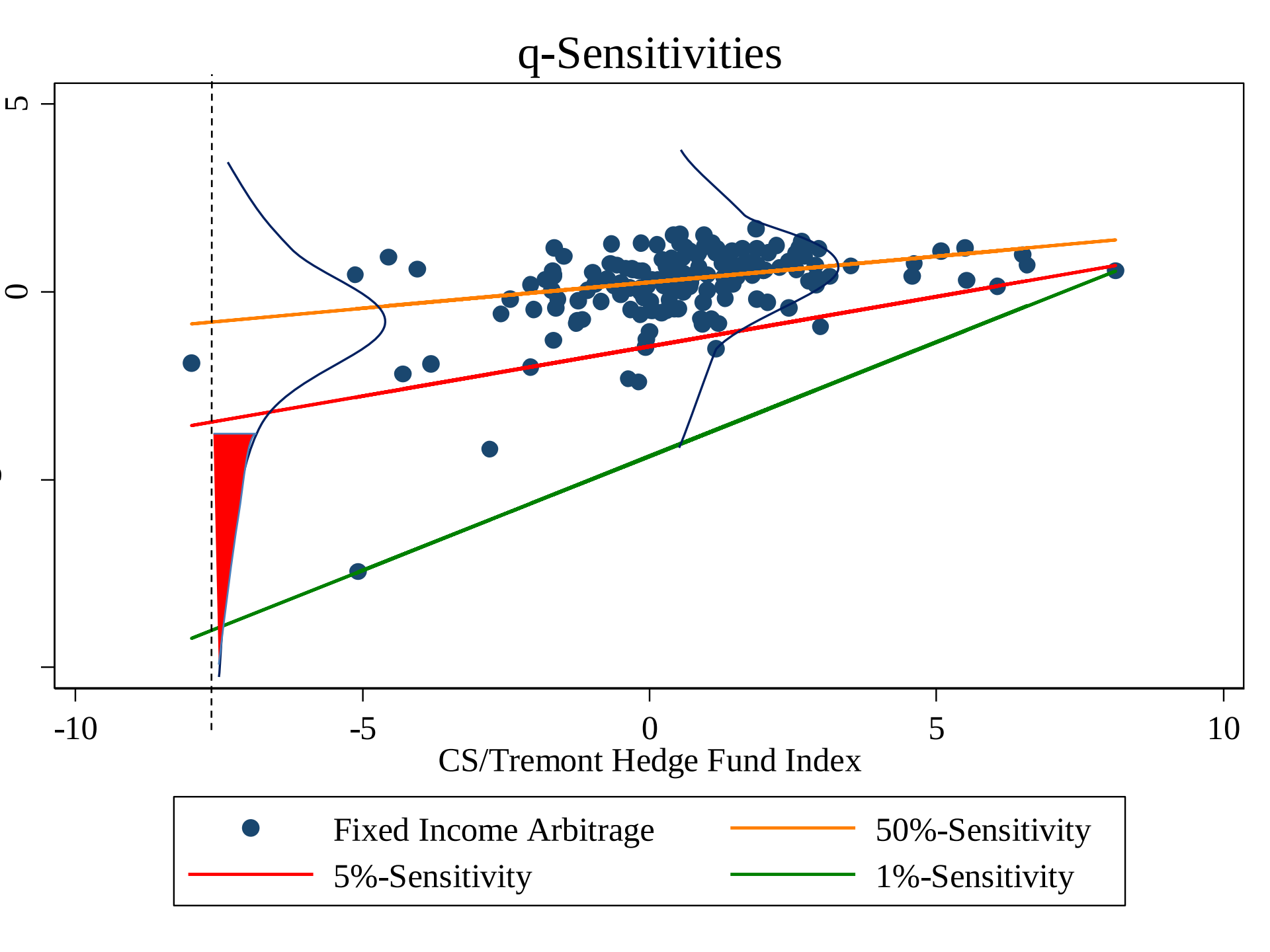
- Definition: CoVaR = VaR of index conditional on that other firm is in distress, i.e. at its VaR level.

$$CoVaR_q^{ij} = VaR_q^i \,|\, VaR_q^j = \hat{\alpha}_q^{ij} + \hat{\beta}_q^{ij} VaR^j$$

- E.g. use quantile regressions

$$\beta^q = \arg\min_{\beta} \Sigma_t \begin{cases} q\left|y_t - \alpha - \beta x_t\right| & \text{if} \quad y_t - \alpha - \beta x_t \geq 0 \\ 1-q \left|y_t - \alpha - \beta x_t\right| & \text{if} \quad y_t - \alpha - \beta x_t < 0 \end{cases}$$

- Compared to OLS $\beta^{OLS} = \arg\min_{\beta} \Sigma_t \left(y_t - \alpha - \beta x_t\right)^2$


q-Sensitivities
5
0
-10
-5
0
5
10
CS/Tremont Hedge Fund Index
Fixed Income Arbitrage
50%-Sensitivity
5%-Sensitivity
1%-Sensitivity

3. Procyclicality (time-series)

- Margin Spiral: Lending Standards/ Margins increase at time of crisis
- Why?
  - Use short past data sample
  - ARCH (time-varying vol.)

Margins/Haircuts:

Rating	Jan-May 2007	July-Aug 2007
	Bond	
Investment grade	0-3	3-7
High yield	0-5	10+
	Leveraged Loan	
Senior	10-12	15-20
2nd lien	15-20	20-30
Mezzanine	18-25	30+
	ABS and CDO	
AAA	2-4	8-10
AA	4-7	20
A	8-15	30
BBB	10-20	50
Equity	50	100

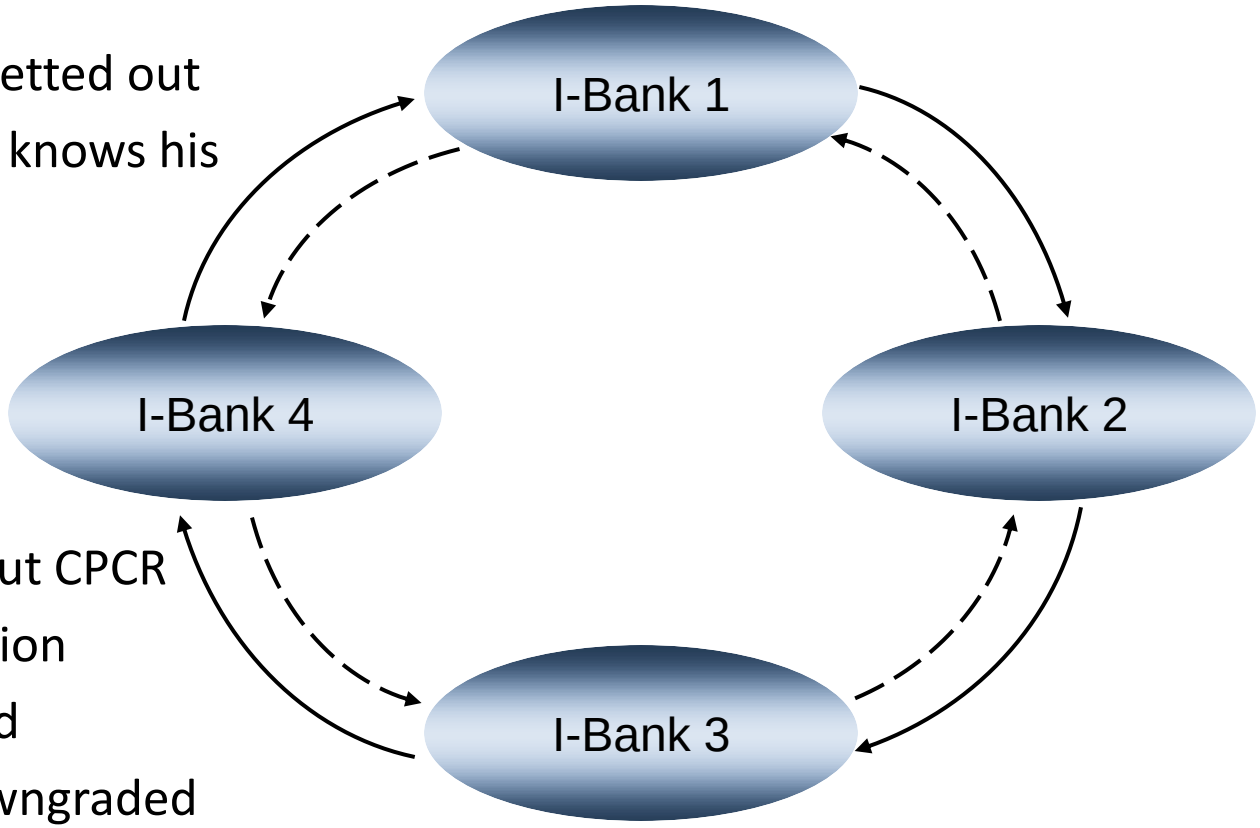
Source: Citigroup, IMF Stability report 2007

Lesson 3 (time-series)

- Countercyclical risk measures
  - Lean against bubbles
  - esp. if bursting of bubble affects banking sector triggering a credit crunch
- Extend Taylor rule
  - Part of inflation index?
- No
  - Mark-to-market on upturn
  - Mark-to-model/purchasing price on downturn
    - hinders recapitalization a la Japan, (debt-overhand)

4. Counterparty Credit Risk

- CDS Example
  - Everything can be netted out
  - But each party only knows his obligations



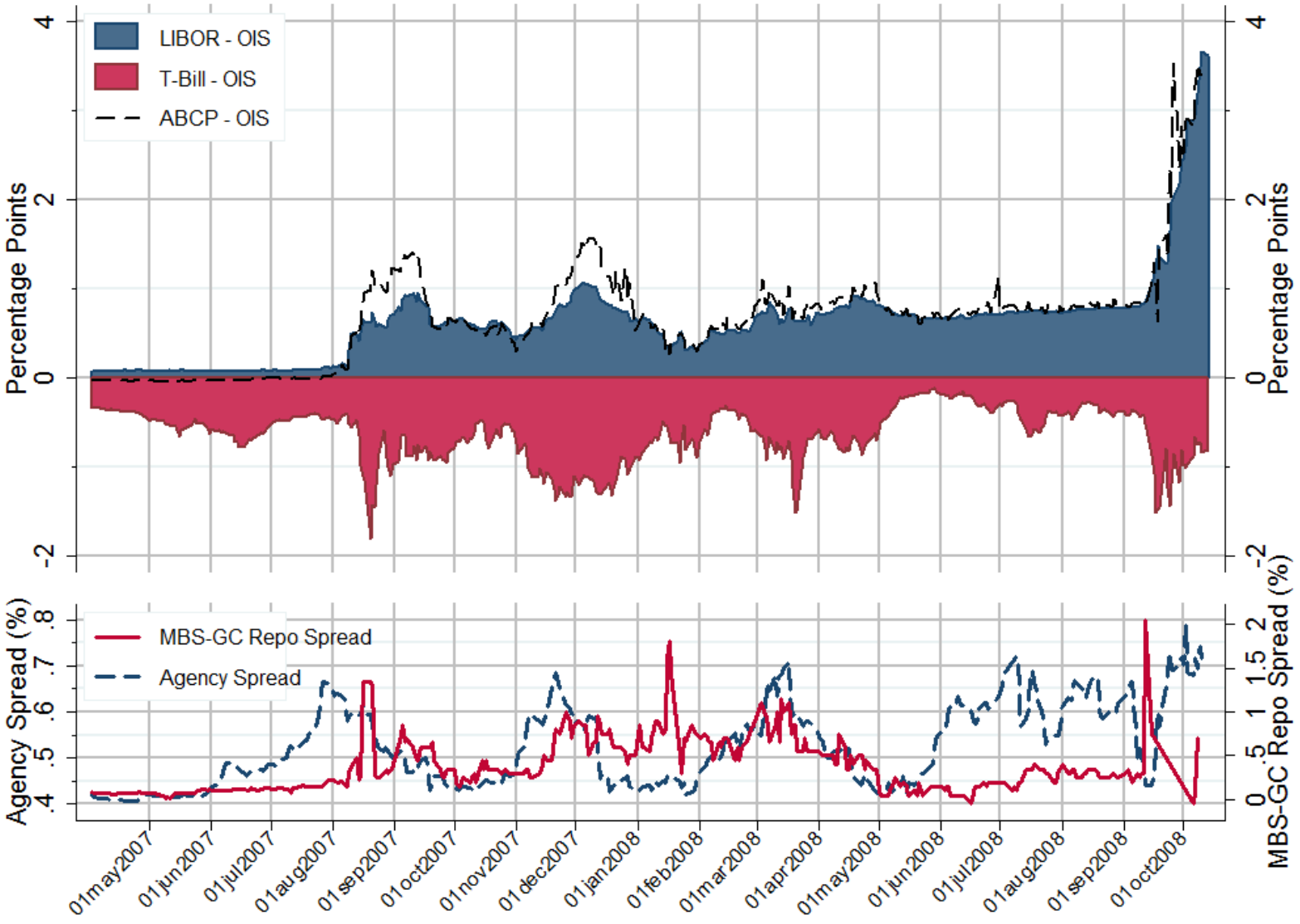
- CDS spiral
  - Banks' concern about CPCR
  - Bought CDS protection
  - CDS spread widened
  - Rating agencies downgraded
  - Hurts bank's cash flow

Lesson 4

- Move to Clearing House arrangement
  - Would allow netting
  - Reduces counterparty credit risk
  - Frees up funds

➡ Impose higher capital charge on OTC contracts

5. Window Dressing due to Snapshot reporting



Observation: Worsens towards the end of a quarter

Problem: Snapshot reporting

Way forward: Report averages instead of snapshots

Lesson 5

- Report averages of a quarter instead of snapshots (eliminates trades due to window dressing)
  - Like for reserve requirements
  - (also for hedge funds SEC 13F filing)

Lesson 6 - Prompt resolution "bankruptcy"

- *Problem:* Bankruptcy resolution is too slow for financial institutions.
  - Shareholder approval is needed for "forced merger" (bailout)
  - Prompt resolution framework that was introduced only for commercial banks (and executed by FDIC) after the S&L crisis
- *Debt-overhang problem*

⇨ Extend prompt resolution framework to all financial institutions (worldwide)

⇨ Convert long-term debt in equity if needed

Lesson 7 - Big banks in small countries

- *Problem:* Small countries (like Switzerland) will not be able to bail out "big" banks (like UBS).

- *Way forward:*

  ➡ Provide a new role for IMF/BIS to arrange burden-sharing across countries.

  (Attention: distorts incentives for supervision

  small country has not incentive to be strict if bailout is paid by neighboring large country)

Lesson 8 – All-finance regulation by CB

- *Problem:*
  - commercial banks, investment banks, hedge funds, insurance companies … all trade same contracts

    ⇒ one "all-finance" regulator
  - Lack of information flow between bank supervision and central bank

    ⇒ undo separation between bank supervision and central bank (SIV problem in UK, Germany, Switzerland vs. Spain)
    - having direct access to bank supervision information is essential to make speedy bailout/no bailout decision

Lesson 9 – CEO compensation

Rule: it is better to incentives decision makers (CEOs) than shareholders

- Focus on long-run
- Punish externality

- Problem: pecuniary payments

Lesson 10 – Reduce Predatory Short-selling

- Short-selling is important to avoid bubbles
  (Note: shorting is impossible in housing market)
- *Problem:* Predatory short selling at times of crisis
  - Sell stocks short to induce liquidity spiral (modern run)
  - Fire-sales reduce fundamental value, which makes shorting profitable
  - Most pronounced for financial firms

➡ Prohibit shorts at times of crisis, for stocks with severe maturity mismatch

- *Caution:* more maturity mismatch in the future!

10 Point Plan

1. Maturity Mismatch – not only leverage
2. Focus on Externalities/Spillovers (cross-section)
   CoVaR instead of VaR
3. Lean against (banking financed) bubbles (time-series)
4. Promote clearing house arrangement
5. Reporting: averages instead of snapshots
6. Prompt resolution framework for all
7. Big banks – small countries
8. All finance supervision back to Central Banks
9. CEO compensation
10. Predatory Short-Selling