Thoughts on a New Financial Architecture

Markus K. Brunnermeier
Princeton University
Overview

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

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

<table>
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<tr>
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- **Rat race**
  - I can withdraw funds before others if bank is in trouble
  - ...
  - Lower inflation risk
  - (Incentivizes CEOs, preference shocks)

- **Money Market Funds**
  - $3 trillion
  - Firms savings
  - $1 trillion

- **Expensive**
- **Cheap**
1. Rate-race: Savers’ prefer short-term

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- 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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### 1. Rate-race: Savers’ prefer short-term

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**Before the crisis**
- More and more short-term funding
- **Roll over** short-term funding liquidity every day!

**FED kept rate low**

**expensive**

**cheap**
1. Rate-race: Savers’ prefer short-term

Commercial Paper (short-term: 90 days)

- ABCP
- Non-ABCP
1. Challenge: Roll over ¼ every night

Overnight-Repos (short-term: 1 day)

Repos as a Fraction of Broker/Dealers' Assets

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

#### Assets

- Long-term assets
  - mortgages
  - firm loans
  - ...

#### Liabilities

- Equity
- Long-term funding
  - expensive
- Short-term funding
  - CP
  - Repo

#### Remarks

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

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- 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
2a. The 2 “Liquidity Spirals”

- **Loss spiral**
  - Net wealth > $\alpha \times x$
  - 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
For Capital/Liquidity regulation

- Replace existing risk measures, like Value-at-Risk (\textit{VaR}) that focus on individual banks with
- Risk measures like \textit{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.

\[ CoVaR_{ij}^q = \text{VaR}_q^i \mid \text{VaR}_q^j = \hat{\alpha}^{ij}_q + \hat{\beta}^{ij}_q \text{VaR}_q^j \]

- E.g. use quantile regressions

\[ \beta^q = \arg \min \beta \sum_t \begin{cases} 
q |y_t - \alpha - \beta x_t| & \text{if } y_t - \alpha - \beta x_t \geq 0 \\
1 - q |y_t - \alpha - \beta x_t| & \text{if } y_t - \alpha - \beta x_t < 0 
\end{cases} \]

- Compared to OLS

\[ \beta^{OLS} = \arg \min \beta \sum_t (y_t - \alpha - \beta x_t)^2 \]
CS/Tremont Hedge Fund Index

Fixed Income Arbitrage

50%-Sensitivity
5%-Sensitivity
1%-Sensitivity

q-Sensitivities
### 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:

<table>
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<tbody>
<tr>
<td><strong>Investment grade</strong></td>
<td>0-3</td>
<td>3-7</td>
</tr>
<tr>
<td><strong>High yield</strong></td>
<td>0-5</td>
<td>10+</td>
</tr>
<tr>
<td><strong>Leveraged Loan</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior</td>
<td>10-12</td>
<td>15-20</td>
</tr>
<tr>
<td>2ⁿᵈ lien</td>
<td>15-20</td>
<td>20-30</td>
</tr>
<tr>
<td>Mezzanine</td>
<td>18-25</td>
<td>30+</td>
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<tr>
<td><strong>ABS and CDO</strong></td>
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<tr>
<td>AAA</td>
<td>2-4</td>
<td>8-10</td>
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<tr>
<td>AA</td>
<td>4-7</td>
<td>20</td>
</tr>
<tr>
<td>A</td>
<td>8-15</td>
<td>30</td>
</tr>
<tr>
<td>BBB</td>
<td>10-20</td>
<td>50</td>
</tr>
<tr>
<td>Equity</td>
<td>50</td>
<td>100</td>
</tr>
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Source: Citigroup, IMF Stability report 2007
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 incentivize 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