Lessons on Capital Flows and Financial Stability

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Capital Flows and Financial Stability

• Banking sector as driver of global financial conditions

• Global banks (esp. European global banks) as transmission channel of global liquidity conditions

• US Dollar as currency underpinning global banking system
Mapping Global Liquidity

- Consequences of global liquidity for United States
- Consequences of global liquidity for Europe
- Consequences of global liquidity for emerging/developing economies
Figure 1. Assets and liabilities of foreign banks in the U.S. (Source: Federal Reserve H8 weekly series on assets and liabilities of foreign-related institutions)
Figure 2. Net interoffice assets of foreign banks in U.S. given by negative of Federal Reserve weekly H8 series on “net due to related foreign offices of foreign-related institutions”
Figure 3. Amount owed by banks to US prime money market funds (% of total), based on top 10 prime MMFs, representing $755 bn of $1.66 trn total prime MMF assets (Source: IMF GFSR Sept 2011, data from Fitch).
Figure 4. US gross capital flows by category (Source: US Bureau of Economic Analysis). Increase in US liability to foreigners is indicated by positive bar, increase in US claims on foreigners is indicated by negative bar.
Figure 5. European global banks add intermediation capacity for connecting US savers and borrowers.
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Borrowers in A

Banks in A

Global Banks

Banks in B

Banks in C

Borrowers in B

Borrowers in C

Wholesale Funding Market
Figure 6. Cross-border claims (loans and deposits) of BIS reporting banks on counterparties listed on right (Source: BIS locational banking statistics Table 7A)
Figure 7. Cross-border claims (loans and deposits) of BIS reporting banks on counterparties listed on right (Source: BIS locational banking statistics Table 7A)
Corporate Finance of Banking

\[
\begin{array}{c|c}
A & L \\
\hline
\text{Assets} & \text{Equity} \\
\text{} & \text{Debt} \\
\end{array}
\]
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<table>
<thead>
<tr>
<th>A</th>
<th>L</th>
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<tbody>
<tr>
<td>Equity</td>
<td></td>
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<tr>
<td>Debt</td>
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[Diagram showing the transfer of assets and liabilities from one set to another]
<table>
<thead>
<tr>
<th>Assets</th>
<th>Equity</th>
<th>Debt</th>
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</table>

| Assets | Equity | Debt |

A → L
Barclays: 2 year change in assets, equity, debt and risk-weighted assets (1992 -2010)

Figure 8. Barclays: 2 year change in assets, equity and debt (1992-2010) (Source: Bankscope)
Figure 9. Société Générale: 2 year change in assets, equity and debt (1999-2010) (Source: Bankscope)
Why did European banks expand so much?

Two candidate hypotheses:


- Advent of Euro opened up cross-border banking market within the eurozone
Figure 10. Three Waves of Capital Flows to Emerging Economies (Source: IMF SPR Department (April 2011))
Figure 11. Categories of Capital Flows to 41 emerging/advanced economies (Source: IMF GFSR, April 2010)
Figure 12. Non-core liabilities of Korean banks (Source: Shin and Shin (2010), data from Bank of Korea)
Figure 13. Non-core liabilities of Korean banks as proportion of M2 (Source: Shin and Shin (2010), data from Bank of Korea)
Figure 14. Capital flows for Korea in equity and banking sector (Source: Shin and Shin (2010), data from Bank of Korea)
Composition of Northern Rock's Liabilities
(June 1998 - June 2007)

Figure 15. Liabilities of Northern Rock (1998 - 2007) (Source: Shin (2009))
Three (Interlocking) Features of the Euro Crisis

- Sovereign debt crisis

- Banking crisis

- Balance of payments crisis
  - Cross-border capital flow reversal
  - “Sudden Stop”

Common thread is the **bank leveraging/deleveraging cycle**
Figure 16. Cross-border euro-denominated claims and liabilities of eurozone banks (Source: BIS Locational Statistics, Table 5A)
Figure 17. Four quarter growth rate of cross-border euro-denominated liabilities of eurozone banks (Source: BIS Locational Banking Statistics Table 5A)
Figure 18. Foreign claims of European BIS-reporting banks on counterparties in Spain (Source: BIS consolidated banking statistics, Table 9D)
Figure 19. Foreign claims of European BIS-reporting banks on counterparties in Ireland (Source: BIS consolidated banking statistics, Table 9D)
Figure 20. Current account of Ireland and Spain (Source: IMF International Financial Statistics)
Figure 21. **Spain**: banking sector total domestic credit (Source: Bank of Spain)
Figure 22. **Spain**: Core liabilities of banking sector (Source: Bank of Spain)
Figure 23. **Spain**: funding gap of Spanish banks (Source: Bank of Spain)
Figure 24. **Spain:** Growth rates of core liabilities of banking sector (Source: Bank of Spain)
Figure 25. **Spain**: funding gap of Spanish banks (Source: Bank of Spain)
Figure 26. **Spain:** Ratio of non-core liabilities to core liabilities of Spanish banks (Source: Bank of Spain)
Figure 27. Mortgage covered bonds outstanding by country and by year (Source: European Covered Bond Council Factbook 2012)
Figure 28. Mortgage covered bonds outstanding by country and by year (Source: European Covered Bond Council Factbook 2012)
Figure 29. **Spain:** stock and new issuance of mortgage covered bonds (Source: European Covered Bond Council)
Figure 30. Covered bond investors by residence (Source: European Covered Bond Council 2012)
Figure 31. Covered bond investors by type of institution (Source: European Covered Bond Council 2012)
Some Historical Parallels

- US mortgage crisis 2007
- Japan’s bursting bubble 1990 – 2003

Slow deleveraging eventually results in bad assets and public recapitalization of banks

How much? How soon? How?

Some lessons from Japan
Figure 32. **Japan**: Loans and discounts of major and regional banks (in red) and M2 money stock (in blue) (Source: Flow of Funds, Bank of Japan)
Some Characteristic Features of Boom and Bust

• Boom phase
  – Rapid increase in lending
  – Increase in loan to deposit ratio
  – Increasing incidence of “non-core” liabilities

• Bust phase
  – Loans and loan-to-deposit ratio decline
  – Liquidity support by central bank cushion (or delay) the process
  – Zombie banks and zombie firms
Figure 33. Numerator is loans to non-MFIs (monetary and financial institutions), excluding general government. Denominator is deposit liabilities to non-MFIs excluding central government (Source: European Central Bank)
Figure 34. **Eurozone**: Loan to deposit ratio. Numerator is loans to non-MFIs (monetary and financial institutions), excluding general government. Denominator is deposit liabilities to non-MFIs excluding central government (Source: European Central Bank)
Figure 35. **Eurozone and Japan**: Loans in Euro area (in red) and in Japan (in blue) normalized to 1.0 at crisis date, and measured in months from the crisis date. Eurozone crisis date is September 2008. Crisis date for Japan is January 1991 (between stock market peak and real estate peak).
Lessons for Eurozone from Japan

- **Liquidity versus solvency**
  - Comparing Eurozone LTRO with BOJ’s monetary policy in 90s
  - Loans granted during the bubble phase almost always go bad, and must be written off eventually...

- Pre-condition for restructuring is **political will**, which needs shared diagnosis of crisis
  - Japan’s deleveraging started 7 years after crisis date (see figure)
  - Restructuring entails **fiscal costs**, which is an added complication in Eurozone

**Question:** How well can the institutions and governance structure of the Eurozone cope with strains of the restructuring process?
Impact of Global Liquidity in China

Figure 36. China: non-financial corporate sector financial assets and liabilities (Source: China Statistical Yearbook, Flow of Funds of Chinese Corporations)
Figure 37. Stylized financial system before inflow of global liquidity (Source: Hattori, Shin and Takahashi (2009))
Figure 38. Stylized financial system with non-financial corporates channeling global liquidity (Source: Hattori, Shin and Takahashi (2009))
Figure 39. Six month growth rate of money stock (Source: People’s Bank of China)
Figure 40. China: corporate and personal deposits of banking sector (Source: People’s Bank of China monetary statistics)
Figure 41. China: ratio of corporate to personal deposits of banking sector (Source: People’s Bank of China monetary statistics)
Figure 42. Monthly growth rates of monetary components in China, filtered through Hodrick-Prescott filter ($\lambda = 14400$)
Impact of Global Liquidity in China

• Dollar funding shortages in 2011 - early 2012 reflecting:
  – US dollar claims are official claims
  – Corporate liabilities

• Build-up phase has close parallels with 1980s experience in Japan
  – Role of large Japanese manufacturing firms
  – Hattori, Shin and Takahashi (2009)

• Leverage cycle of global banks affect liquidity conditions in China
Macroprudential vs Microprudential Regulation

Microprudential regulation focuses on solvency of individual institutions.

Two shortcomings:

- Does not address excessive asset growth
- Does not address consequences of unwinding - runs, deleveraging and twin crises
Figure 43. Loan growth and provisions for Allied Irish Banks, 2004 - 2009 (Source: Annual Reports)
<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
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<tbody>
<tr>
<td>Loan Growth</td>
<td>28%</td>
<td>43%</td>
<td>30%</td>
<td>14%</td>
<td>-1%</td>
<td>-3%</td>
</tr>
<tr>
<td>Provisions (% total loans)</td>
<td>0.19%</td>
<td>0.15%</td>
<td>0.09%</td>
<td>0.07%</td>
<td>1.36%</td>
<td>4.09%</td>
</tr>
<tr>
<td>Tier 1 capital ratio (%)</td>
<td>7.9</td>
<td>7.2</td>
<td>8.2</td>
<td>7.5</td>
<td>7.4</td>
<td>7.2</td>
</tr>
<tr>
<td>Total capital ratio (%)</td>
<td>10.7</td>
<td>10.7</td>
<td>11.1</td>
<td>10.1</td>
<td>10.5</td>
<td>10.2</td>
</tr>
</tbody>
</table>

Figure 44. Capital ratios for Allied Irish Banks 2004 - 2009 (Source: Annual reports)
<table>
<thead>
<tr>
<th>Policy Tool</th>
<th>Advantages</th>
<th>Drawbacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loan-to-Value (LTV) cap</td>
<td>Low administrative burden</td>
<td>Ineffective during rapid housing boom</td>
</tr>
<tr>
<td>Debt service-to-Income (DTI) cap</td>
<td>Ties loan growth to wage growth</td>
<td>High administrative capacity needed for data on income</td>
</tr>
<tr>
<td>Loan-to-Deposit Caps</td>
<td>Low administrative burden</td>
<td>Distorts bank funding Not applicable to foreign banks</td>
</tr>
<tr>
<td>Reserve Requirement</td>
<td>Low administrative burden</td>
<td>Ineffective with low interest rates, burdens central bank</td>
</tr>
<tr>
<td>Levy on FX-denominated bank liabilities</td>
<td>Price-based measure Enhances monetary policy Counters FX risk</td>
<td>Needs legislation Narrow base of levy</td>
</tr>
<tr>
<td>Countercyclical capital requirements</td>
<td>Conforms to Basel III</td>
<td>Difficulty in calibration Level playing field issues</td>
</tr>
<tr>
<td>Forward-looking provisioning</td>
<td>Modifies bank incentives</td>
<td>Objections from accounting standard setters</td>
</tr>
<tr>
<td>Leverage cap</td>
<td>Modifies bank incentives</td>
<td>Not price based Open to circumvention Vulnerable to bank FDI</td>
</tr>
</tbody>
</table>

Figure 45. Taxonomy of macroprudential tools
<table>
<thead>
<tr>
<th>Monetary policy autonomy</th>
<th>Financial Liberalization/Openness</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Asset Side Tools (LTV, DTI), Bank Capital-Oriented Policies (dynamic provisioning, leverage caps, countercyclical capital requirements)</td>
</tr>
<tr>
<td>Low/Medium</td>
<td>Asset Side Tools (LTV, DTI, loan-to-deposit cap), Monetary policy combined with Liabilities Side Tools (non-core liabilities levy), Bank Capital-Oriented Tools (leverage cap)</td>
</tr>
<tr>
<td>High</td>
<td>Monetary policy, Bank Capital-Oriented Tools (dynamic provisioning, leverage caps, countercyclical capital requirements)</td>
</tr>
</tbody>
</table>

Figure 46. Macroprudential policy priorities depending on openness and monetary policy autonomy