The Nexus Between Financial Sector and Sovereign Credit Risks: Theory and Evidence

Toulouse Lectures in Economics (forthcoming)
Presentation at Copenhagen Business School, August 2014

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A Framework to Understand Recent Financial and Sovereign Crises

• Economic agents:
  – Financial sector
  – Real sector or households
  – Governments

• Financial sector critical to intermediation

• Key agency problems:
  – Debt-overhang or risk-shifting by under-capitalized financial firms
  – Myopia and populism of governments in public finances and fiscal policy
Bank – Sovereign Credit Risk Loop

• Sovereigns sacrifice credit quality to bail out the distressed financial sector
  – Financial sector credit risk -> Sovereign credit risk

• (Further) Deterioration of sovereign credit risk weakens financial sector further
  – Sovereign credit risk -> Financial sector credit risk
  – Direct collateral damage as well as weakened guarantees

• Weakened non-financial sector from crowding out effects of sovereign debt -> Stagnation
Ireland announced bank bailouts on September 30, 2008.
Banks Gamble on Risky Sovereign Debt

• Bailed-out or under-capitalized banks have incentives to gamble
  – Sovereign riskiness makes government bonds an attractive gamble for out-of-money equity
  – Domestic government bonds even more attractive as gambles leading to “home bias”

• Banks fund sovereign debt in short-term funding markets for maximum “carry”
  – Bank solvency and liquidity risk deeply inter-twined
  – Lead to weakened non-financial sector -> Stagnation
Panel A. Italian and German 10-year government bond yields
Panel B. Spanish and German 10-year government bond yields
Increasing Sovereign Exposure: Bank Level Evidence

By Bank Risk (Holdings scaled by Total Assets)

<table>
<thead>
<tr>
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<th>Δ Italy March 2010-Dec 2010</th>
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<tbody>
<tr>
<td>High Tier 1</td>
<td>0.022</td>
</tr>
<tr>
<td>Low Tier 1</td>
<td>0.491</td>
</tr>
<tr>
<td>High RWA/Assets</td>
<td>0.696</td>
</tr>
<tr>
<td>Low RWA/Assets</td>
<td>0.004</td>
</tr>
<tr>
<td>High Loans/Assets</td>
<td>0.387</td>
</tr>
<tr>
<td>Low Loans/Assets</td>
<td>-0.022</td>
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<tr>
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<th>Δ Spain March 2010-Dec 2010</th>
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<tbody>
<tr>
<td>High Tier 1</td>
<td>-0.015</td>
</tr>
<tr>
<td>Low Tier 1</td>
<td>0.679</td>
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<tr>
<td>High RWA/Assets</td>
<td>0.543</td>
</tr>
<tr>
<td>Low RWA/Assets</td>
<td>0.072</td>
</tr>
<tr>
<td>High Loans/Assets</td>
<td>0.505</td>
</tr>
<tr>
<td>Low Loans/Assets</td>
<td>-0.066</td>
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For example, banks with a Tier-1 ratio below 9.03% (the 25% quartile) increase their Italian bond holdings, on average, by 0.49% of total assets between March and December 2010.

Banks with low Tier 1 ratios, high RWA / Assets and high Loans / Assets increase their exposure to Italian and Spanish sovereign debt.
Increase in Home Bias After ECB Dec‘11 and Feb‘12 LTROs

- The exposure of core European banks to Italian and Spanish sovereign debt *decreased* over the March 2010 to June 2012 period.

- The exposure of peripheral banks to their domestic sovereign debt *increased* over the same period.

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<tr>
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<th>Italian Bank</th>
<th>% Change (2010)</th>
<th>% Change (2012)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>19.26%</td>
<td>-0.86%</td>
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<tr>
<td>Yes</td>
<td>13.22%</td>
<td>24.65%</td>
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<tbody>
<tr>
<td>No</td>
<td>66.34%</td>
<td>-7.69%</td>
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</tr>
<tr>
<td>Yes</td>
<td>3.71%</td>
<td>11.28%</td>
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</table>
Banks exposures to sovereign risk by Bank country

% Total assets

GB  | DE  | FR  | IT  | IE  | ES  | PT  
0   | 2   | 4   | 10  | 20  | 15  | 25  

Source: EBA stress test
Liquidity risk: US MMF Withdrawals

This figure depicts the investments of US MMF in European banks since October 2010.

Sale of commercial paper and repurchase agreements of European banks during the January to December 2011 period.
Panel B. U.S. MMF Withdrawals and Bank Capitalization

US MMF Holdings (USD bn)
High Market LVG vs. Low Market LVG

- **Volume (USD bn)**
  - 100
  - 90
  - 80
  - 70
  - 60
  - 50
  - 40
  - 30
  - 20
  - 10
  - 0

- **Date**
  - 01 Jan 2011
  - 01 Jan 2012
  - 01 Jan 2013

- **Lines**
  - Low Leverage (dashed line)
  - High Leverage (solid line)
Government Myopia and Sovereign Debt

• Why don’t governments limit the bank holdings of own debt?
  – Governments in fact encourage banks to hold more
  – Or consciously leave (or let) banks (be) under-capitalized

• Myopic nature of government borrowing for populism (or unwillingness to incur populist costs)
  – Postpone restructuring to future dates and governments
  – May engage in financial repression (“narrow banks”!)

• Debt overhang of banks and government myopia create an unholy nexus between financial and sovereign credit risks, which leads to stagnation
Transmission to the Real Economy

• Significant contraction in bank lending (spot as well as lines of credit) during sovereign debt crisis in the Eurozone periphery
  – In Ireland and Spain overall loan volume declined by 82% and 66%, respectively
• How does this impact the corporate policy of borrowing firms?
• Firms with a higher exposure to banks affected by the sovereign debt crisis become financially constrained
  – Increase precautionary holdings of cash, which leads to
    • lower employment growth
    • lower capital expenditures
    • lower sales growth rates
Summary

Debt Overhang of the Financial Sector
- Risk-shifting by under-capitalized institutions
  - Financial Crisis
    - Credit Crunch
  - Credit Crunch
    - Economic Stagnation
- Zombie Banks

Myopia and Populism in Public Finances
- Demand for excessive sovereign debt
  - Home Bias
    - Bailouts
  - Bailouts
    - Sovereign Crisis
- Zombie Sovereigns

Collateral damage
- Crowding Out
  - Economic Stagnation
- Economic Stagnation
Does This Matter in Macro Finance?

• What are the “macro” facts about financial sector and crises?
• View 1:
  – Banks face tight market discipline (“solvency constraint”)
  – Banks de-leverage in wake of adverse shocks
  – The real problem of crises is this de-leveraging
  – Banks hold safe assets in crises and shun risky ones
  – Public finance and bank regulations are in terms of importance second-order effects
Does This Matter in Macro Finance?

• What are the “macro” facts about financial sector and crises?

• View 2:
  – Banks do not face adequate market discipline (“too big to fail”, “too many to fail”, “too systemic to fail”…)
  – Banks continue as Zombies in the wake of crises
  – The real problem of crises is the persistent debt overhang or under-capitalization
  – Banks hold (legacy) risky assets and shun safer assets
  – Public finance and bank regulations are intimately tied to bank choices in good times
Some Open (Rhetorical!) Questions

• Do we want to fit macro-finance models and their insights to data that come from a world with bank regulation, bank bailouts and exploding public finance?

• Can we meaningfully calibrate macro-finance models to recent crises without role for public finance, e.g., in housing and sovereign debt, the epicenter of crises?

• Do macro-finance models have the “right” economic foundations? Do we need a different set of micro-foundations for macro-finance going forward?
References

• “A Pyrrhic Victory? Bank Bailouts and Sovereign Credit Risk” (Viral Acharya, Itamar Drechsler and Philipp Schnabl, Journal of Finance)


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• “Real Effects of the Sovereign Debt Crises in Europe: Evidence from Syndicated Loans” (Viral Acharya, Tim Eisert, Christian Eufinger and Christian Hirsch)