Breaking the Feedback Loop: Macroprudential Regulation of Banks’ Sovereign Exposures

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Motivation

European debt crisis and the sovereign-bank feedback loop:
- Mutually reinforcing negative effects of sovereign risk, financial instability and depressed economic activity

Fig. 1: CDS premia on sovereign and banks. Source: Merler and Pisani-Ferry (2012)

- Current regulatory framework criticized for incentivizing excessive exposure of banks to sovereign risk

Question: Could bank capital regulation break the feedback loop?

Regulatory background

Basel agreements (implemented via CRR/CRD IV in the EU):
- Banks subject to capital requirements $\gamma$ on risk-weighted assets
- However, domestic sovereign bonds are treated as riskless ($\iota = 0$)

Fig. 2: Simplified bank balance sheet

This paper

Non-linear DSGE model sheds light on the mechanisms behind:
- Endogenous feedback between bank failure and sovereign default risk
- Macroprudential implications of regulating banks’ sovereign exposures

Model overview:

Key distortions:
- Limited liability + deposit insurance: risk-shifting incentives
- Opaque balance sheets: deposits priced according to avg. bank risk
- Socially costly bank failure: motivates capital regulation
- Limited participation in equity market constrains bank intermediation
- Sovereign risk increasing in the level of public debt
- Government fails to guarantee bank debt if it defaults

Results

The feedback loop has dramatic effects on bank stability and economic activity even if default does not materialize:
- Higher sovereign yields make banks increase their sov. exposures (and their leverage), increasing their probability of failure
- Since, in the event of default, deposits cease to be insured, this translates into higher bank funding costs to compensate for potential losses

$\Rightarrow$ Sovereign risk as a source of systemic spillovers: initial shock to a small fraction of banks translates into system-wide instability, further declines in bank capital and depressed economic activity

Fig. 4: Response to a bank failure shock – Key endogenous variables

Red lines: constant sovereign default risk and zero risk weights ($\iota = 0$)
Blue lines: endogenous sovereign default risk and zero risk weights ($\iota = 0$)
Lighter blue lines: higher risk weights for sov. debt (from $\iota = 5\%$ to $\iota = 70\%$)

Capital requirements for sovereign exposures mitigate the negative externalities associated with the following distortions:
- Limited liability: risky sovereign debt may be attractive for banks, which profit from high returns as long as the government does not default and suffer losses limited to their initial equity otherwise
- Opaque balance sheets: individual banks do not internalize the effect of their risk profile on the funding costs of the banking system

Fig. 2: Simplified bank balance sheet

Welfare trade-offs from increasing sovereign risk weights ($\iota > 0$):
- skin in the game $\uparrow \Rightarrow$ risk-shifting incentives $\downarrow$
- leverage $\downarrow \Rightarrow$ bank failure risk $\downarrow$
- leverage $\downarrow \Rightarrow$ output $\downarrow$
- banks’ bond holdings $\downarrow \Rightarrow$ govt. borrowing costs $\uparrow$

Quantitative exercise: calibration based on a peripheral EU country (Spain 2000-2012)

$\Rightarrow$ Optimal risk weight: $\iota = 40\%$ (for a given capital requirement $\gamma = 8\%$)