Financial Integration and Financial Instability

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Safe securities and financial integration

- Examples: bank deposits, short-term collateralized debt
- Useful medium of exchange: prevents adverse selection

Cross-border flows:
- Massive increase in cross-border capital flows in Europe since introduction of Euro
- Partly associated with banks selling safe claims abroad
- Why?
  - Removal of capital controls and exchange rate risk

This paper asks:
- Can safe debt markets integration make crises worse? Yes
- Can this integration reduce welfare? Yes
- How should financial sectors be regulated in the integrated world? Depends: local vs. global regulator
SAFE SECURITIES AND FINANCIAL INTEGRATION

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Cross-border flows:

▶ Massive increase in cross-border capital flows in Europe since introduction of Euro (Plots)
▶ Partly associated with banks selling safe claims abroad
▶ Why? Removal of capital controls and exchange rate risk
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▶ *Why?* Removal of capital controls and exchange rate risk

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**Related Literature**

Imbalances due to difference in financial development
- Caballero, Farhi, Gourinchas (2008), Mendoza, Quadrini, Rios-Rull (2009)
- **This paper**: Different productivities of marginal projects

Welfare effects of financial integration
- Mendoza, Quadrini, Rios-Rull (2009), Eden (2012)
- **This paper**: Endogenous creation of safe and liquid assets

Banking integration may increase volatility of prices
- Castiglionesi, Feriozzi, Lorenzoni (2009)
- **This paper**: Financial frictions

Macroprudential regulation of capital inflows
- Jeanne and Korinek (2010), Bianchi (2011)
- **This paper**: Capital controls ≠ prudential regulation

Terms of trade manipulation
- Obstfeld, Rogoff (1996), Costinot, Lorenzoni, Werning (’12), Bengui (2012)
- **This paper**: Banking regulation affects world interest rate
Model Economy

- Households value holding safe debt

- Banks have incentives to create safe assets

- More safe debt can be created when it is short-term

- Short-term debt creates fire-sales when households doubt quality of assets

- Limit on safe debt issuance is determined by the demand for banks assets in crisis
Equilibrium

Binding Collateral Constraints
EQUILIBRIUM

BINDING COLLATERAL CONSTRAINTS
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BINDING COLLATERAL CONSTRAINTS
Equilibrium

Binding Collateral Constraints

\[ D_s(R_D) = Q(R_D)Z(R_D) \]
EQUILIBRIUM

BINDING COLLATERAL CONSTRAINTS

Return on Safe Assets, $R_D$

Safe Assets, $D$

Fire-sale price, $Q_c$

Banks Assets, $Z$

$D_d$

$D_s$

$Q_c(R_D)$

$Z(R_D)$

$B$

$OI$
INEFFICIENCIES AND EXTERNALITY

Frictions
▶ Nonpecuniary demand for safe claims
▶ Bankers inability to raise new funds in crisis

Externality
▶ Pecuniary externality when collateral constrains bind
▶ Overinvestment and overissuance of safe securities

Policies
▶ Limit safe short-term debt issuance
▶ Tax safe debt
Cross-Country Assumptions

Countries
- Center (C), Periphery (P)

Markets
- Banks funding markets are **global**
- Fire-sale markets are **local**
- Banks invest **locally**

Why does capital flows from center to periphery?
- higher returns on *new* investments in periphery
Effects of Integration

(a)

(b)

(c)
Effects of Integration

Center

Periphery

(a)

(b)

(c)

(d)
Effects of Integration:

- Center:
  - \( R_D \) vs. \( D^C \)
  - \( D^C \) vs. \( D^C \)

- Periphery:
  - \( R_D \) vs. \( D^P \)
  - \( D^P \) vs. \( D^P \)

- (c):
  - \( Q^C \) vs. \( Z^C \)
  - \( \bar{B}(R^C_D(Aut), A^C) \)

- (d):
  - \( Q^P \) vs. \( Z^P \)
  - \( B(R^P_D(Aut), A^P) \)

(a) and (b) illustrate the impact of integration on resource distribution and demand across the center and periphery, respectively. (c) and (d) depict the relationship between quality and location, considering autonome and policy effects.
EFFECTS OF INTEGRATION

(a) Center

(b) Periphery

(c) $Q^C$ vs $Z^C$

(d) $Q^P$ vs $Z^P$
Welfare Effects of Integration

Result

1. The center always benefits from integration.
2. When asymmetry between countries is not large enough then the periphery losses from integration.

Intuition

- **Gains** are second order in the size of capital flows
- **Losses** are proportional to the size of capital flows
(Periphery) Regulator

- Maximizes her country economic welfare
  \[
  \max_{\tau^P} U^P
  \]

- Faces all equilibrium conditions as constraints

- Chooses proportional taxes $\tau^P$ on safe debt issuance
Effects of Regulation

Center

Periphery

\[ R_D \]  \hspace{1cm}  \[ D_C \]

\[ R_D \]  \hspace{1cm}  \[ D_P \]

\[ D_s \]  \hspace{1cm}  \[ D_d \]

\[ D_s^C \]  \hspace{1cm}  \[ D_d^C \]

\[ Q_C \]  \hspace{1cm}  \[ Z_C \]

\[ Q_P \]  \hspace{1cm}  \[ Z_P \]

\[ B(A_C^C, \tau_C^C = 0) \]

\[ B(A_P^P, \tau_P^P = 0) \]
Effects of Regulation

Center

(a)

Periphery

(b)

(c)

(d)

\[ B(A^C, \tau^C = 0) \]

\[ B(A^P, \tau^P > 0) \]

\[ B(A^P, \tau^P = 0) \]
Effects of Regulation

Center

Periphery

$RD$ $RD$

$RD$ $RD$

$DC$ $DP$

$DC$ $DP$

$Q^C$ $Z^C$

$Q^P$ $Z^P$

$B(A^C, \tau^C = 0)$

$B(A^P, \tau^P = 0)$

$B(A^P, \tau^P > 0)$

(a)

(b)

(c)

(d)
Effects of Regulation

Center

Periphery

\[ R_D \quad D^C \]

\[ R_D \quad D^P \]

\[ Q^C \quad OI \]

\[ Q^P \quad OI \]

\[ B (A^C, \tau^C = 0) \]

\[ B (A^P, \tau^P > 0) \]

\[ B (A^P, \tau^P = 0) \]
WELFARE EFFECTS OF REGULATION

Periphery regulator’s decision has three effects on periphery:

- Reduction of overissuance of safe debt (positive)
- Reduction of supply of valuable safe securities (negative)
- Interest rate manipulation (positive)
WELFARE EFFECTS OF REGULATION

Periphery regulator’s decision has three effects on periphery:

▶ Reduction of overissuance of safe debt (positive)

▶ Reduction of supply of valuable safe securities (negative)

▶ Interest rate manipulation (positive)

and two effects on the center

▶ Increase in overissuance of safe debt (negative)

▶ Interest rate manipulation (negative)
Result
A Nash equilibrium can be locally Pareto-improved if the periphery regulator decreases and the center regulator increases their taxes.

Implications
▶ Scope for coordination of financial regulation policies
▶ Global regulator finds it optimal to set country-specific state-dependent taxes
Can capital controls help?

- Currently popular among some policy makers
- Recent literature in international finance provide rational
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**No:** for global regulator
- Capital controls will only introduce inefficiency

**Yes:** for local regulator
- It is optimal to address two objectives (reduction of externality and interest rate manipulation) with two tools
Conclusion

- Financial integration leads to larger crises in recipient country
- Integration may lead to welfare losses in recipient country
- Regulators choose inefficient levels of safe debt taxation
- Regulators want to use both debt and capital flows taxation
Thank You
Additional Slides
CA/GDP

%  

Germany  

Spain  

Source: Eurostat
Financial sector liabilities
(trillion of €)

Source: Shin (2012) and Bank of Spain
85% are owned by foreigners in 2011

Source: Shin (2012) and Barclays Capital
\[
\max_{C_0, C_2(s_2), D, B(s_2)} \quad C_0 + \beta E C_2 + v(D)
\]

s.t.
\[
C_0 + \frac{1}{R_D} D + \sum_{s_2} B(s_2) P_B(s_2) \leq Y
\]

\[
C_2(s_2) \leq D + B(s_2) + \pi_{Banker}(s_2) + \pi_{OI}(s_2)
\]

Interior solution for \(B(s_2)\) and \(D\) implies
\[
R_B = \frac{1}{\beta} > R_D = \frac{1}{\beta + v'(D)}
\]
Objective

\[ C_0 + v_0(D_0) \]

\[ + p\beta \max_{D_1 \in [0, D_0]} \left[ D_1 + B(G) + \pi_{Banker}(G) + \pi_{OI}(G) + D_0 - D_1 + v_1(D_1 + D_0 - D_1) \right] \]

\[ + (1 - p)\beta \max_{D_1 \in [0, D_0]} \left[ q \{ D_1 + B(Bnc) + \pi_{Banker}(Bnc) + \pi_{OI}(Bnc) + D_0 - D_1 + v_1(D_0 - D_1) \} \right. \]

\[ + (1 - q) \{ B(Bc) + \pi_{Banker}(Bc) + \pi_{OI}(Bc) + D_0 - D_1 + v_1(D_0 - D_1) \} \]

where \( D_1 \) is roll-over choice.

In optimum \( D_1(G) = D_0 \) and \( D_1(B) = 0 \).

\[ \downarrow \]

\[ C_0 + \beta\mathbb{E}C_2 + v(D_0) \]

where \( v(D_0) = v_0(D_0) + \beta v_1(D_0) \).
\[ \max_{B,D,I,K} \pi_{\text{Banker}} = p \left[ AF(I) - D - \overline{B} \right] \]
\[ + (1 - p) \left[ Q_c K - D + q \left( AF(I) - K - \min\{\overline{B}, AF(I) - K\} \right) \right. \]
\[ \left. + (1 - q) \cdot 0 \right] \]

Budget at \( t = 0 \)
\[ I \leq \frac{D}{R_D} + P_B(G)\overline{B} + P_B(B_{nc}) \min\{\overline{B}, AF(I) - K\} \]

Safe debt must be safe
\[ D \leq Q_c K \]
\[ K \leq AF(I) \]
Uncertainty

Good news

Bad news

$Z$

$p$

$1 - p$

$q$

$1 - q$

$t = 0$

$t = 1$

$t = 2$
**Outside Investor**

- **Endowment** \( W \) in \( t = 1 \)
- **Storage technology**: \( D_{OI} \)
  
  \[\text{increasing, concave, } \delta g'(W) > 1\]

- **Late technology**: \( W - D_{OI} \)
  
  \[x \rightarrow \delta g(x) + (1 - \delta) \cdot 0\]

- **Buys** \( K \) risky projects at \( Q_c \) from banks:
  
  \[Q_cK \leq D_{OI}\]

**Problem**

\[
\max_{K,D_{OI}} \pi_{OI} = \underbrace{q \cdot K}_{\text{Risky projects}} + \underbrace{\delta \cdot g(W - D_{OI})}_{\text{Late technology}} + \underbrace{[D_{OI} - Q_cK]}_{\text{Storage technology}}
\]

**Solution**

\[q = Q_c \delta g'(W - Q_cK)\]
**Full Integration**

Main results

- Local lending markets
- Local fire-sale markets

Full integration?

Assumptions

- Ex ante symmetric countries
- Correlation $\mu$ between arrival of good/bad news
**Full Integration**

**Fire-sale market integration**

- Larger pool of outside investor funds when only economy is in crisis
- Incentives to issue more safe debt

**Lending market integration**

- Effective diversification of collateral
- Incentives to issue more safe debt
Source: IMF