Cheap but Flighty: How Global Imbalances Create Financial Fragility

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Global imbalances

- Common view: US credit boom caused by global imbalances
  - Large foreign inflows compensated low US savings
  - This kept interest rates low and boosted credit volume
  - Evidence: volume of credit associated with crises

- Does composition of funding contribute to crises?
Historically, capital moved from developed to emerging countries
- less than implied by neoclassical theory (Lucas, 1990)
- explained by political risk, weak property rights

Reversal of net flows since 1998 (Prasad et al., 2007)
- US capital inflows: $7.8 trillion over 2002–07 (Forbes, 2010)
- 81% held by private sector (often anonymously)
This paper

- Capital flows from emerging to developed countries

- Focus on safety-seeking flows
  - Exposed to expropriation risk
  - Seek property right protection

- Safety-seeking inflows contribute to domestic fragility
  - Cheap source of funding, more investment
  - Flighty: risk-avoiding savers create instability
  - Trade-off emerges under optimal contracting, without bailouts or deposit insurance
Model

- Three dates \( t = 0, 1, 2 \) and two regions

- Domestic and foreign savers of mass 1 and \( W \)

- Identical endowment \( e > 1 \), identical preferences

- Demand for some absolute safety
  - minimum consumption level \( S \in (0, 1) \)
  - risk-neutral once subsistence is secured

\[
U(c_1, c_2) = \begin{cases} 
  c_1 + c_2 & \text{if } c_1 + c_2 \geq S \\
  -\infty & \text{if } c_1 + c_2 < S 
\end{cases}
\]

- Consistent with evidence on strong demand for safe assets
Intermediaries can lend to real investment
  ▶ unit mass of domestic intermediaries $i \in [0, 1]$
  ▶ funded by claims issued to savers

Savers can invest directly in local assets, and via intermediaries in assets abroad
  ▶ Physical storage, offers return of $x \in [\frac{S}{e}, 1)$
  ▶ Government bonds, yielding 1 at $t = 1$, $T > 1$ at $t = 2$
Expropriation risk

- Domestic government never expropriates

- Foreign government may expropriate assets in own region (except storage)
  - Expropriation risk is heterogeneous
    - $\theta_L > 0$ for locals
    - $\theta_H > \theta_L$ to domestic agents

- Expected return in foreign region is $R_F$
  
  \[(1 - \theta_H)R_F < T < (1 - \theta_L)R_F\]

- This discourages speculative capital flows

- We focus on safety-seeking flows from abroad
Intermediaries and real investment

- Common lending technology with return at $t = 2$:
  - $R$ with probability $\gamma \in (0, 1)$ or zero

- Decreasing returns to scale from investment $l_i \geq 0$

- Early liquidation at $t = 1$ yields a fraction $\alpha \in (0, 1)$
  - Liquidation efficient in the low state
  - Liquidation inefficient in the high state: $R \left( \frac{x}{x-\alpha} \right) > \alpha$

- At $t = 1$, uncertainty is resolved with some probability

- Assume: under uncertainty, best not to liquidate
Information structure

State Revelation at $t=1$?

- $\gamma$: H
  - $\delta$: Yes
  - $1-\delta$: No
- $1-\gamma$: L
  - $\epsilon$: Yes
  - $1-\epsilon$: No

Asset return at $t=2$
- R
- R
- 0
- 0
How to achieve absolute safety?

- **Domestic savers**
  - storage (no: dominated)
  - domestic bonds (yes)
  - safe claim on a domestic intermediary (in equilibrium, choose a risky claim)

- **Foreign savers**
  - storage (outside option)
  - safe claim on a domestic intermediary (equilibrium choice)
Intermediaries and funding

- Intermediaries max equity value under limited liability
- Each has access to domestic funding equal to \( d_i \in [0, 1] \)
- Compete freely for foreign funding \( f_i \geq 0 \)
  - Signal at \( t = 1 \) and return at \( t = 2 \) not verifiable
  - So intermediaries offer a menu of debt contracts
  - Either long-term or demandable, \{\((L_1, L_2), (X_1, X_2)\)\}
Equilibrium with foreign inflows
Assume that no liquidation is optimal under interim uncertainty:

\[ \epsilon < \bar{\epsilon} \equiv \frac{\gamma(1 - \delta)}{1 - \gamma} \frac{R \left( \frac{x}{x - \alpha} \right) - \alpha}{\alpha}, \]

**Proposition**

*The intermediaries target*

- *long-term debt to domestic savers, with expected yield* \( T \);
- *demandable debt to foreigners, minimizing early withdrawal payoff at* \( X_1^* = x \).
Portfolio choice of savers

- Domestic savers obtain safety by investing $S/T$ in the domestic long-term bond, and the remaining unit wealth in risky debt of the intermediary.

- Foreign savers either store $S/x$ or invest in demandable debt provided it is absolutely safe and has a return of at least $x$. Their remaining wealth is invested in foreign risky assets.
Demandable debt is optimal

- Recall: early liquidation is inefficient under uncertainty
- This leaves minimal risk in long-term funding
- Thus foreign savers refuse long-term debt at $t = 0$

**Lemma**

**Absolute safety and demandable debt.** Foreign savers accept a demandable debt claim if enough (loss-absorbing) domestic funding is attracted, $d_i \geq \frac{x-\alpha}{\alpha} f_i$. 
Financial fragility

Lemma

*Foreign savers achieve absolute safety by withdrawing under uncertainty (to avoid minimal risk), and in the low state (to avoid dilution).*

- Trade-off between the **cost** and **stability** of funding
  - cheap foreign funding enable to expand investment
  - inefficient liquidation under uncertainty

- Banks attract cheap foreign funding if
  - cheap enough \((W > \underline{W})\)
  - not too flighty \((\delta \geq \underline{\delta})\)
Extensions
More bank lending implies lower NPV, but not necessarily more risk

Yet more lending may require choosing increasingly opaque assets

Let \( \delta = \delta(I_j) \) with \( \frac{d\delta}{dl_j} < 0 \).

Consequences of increasing opacity: greater frequency of runs

As intermediary bears all cost, reduce investment
Runs may impose social costs
  ▶ illiquidity externalities (e.g., Stein (2002))
  ▶ social cost of excess liquidation $\xi > 0$

Constrained planner (P)
  ▶ takes supply of foreign and domestic funding as given
  ▶ chooses domestic and foreign funding $f_P(X)$
  ▶ $f_P < f^*$

Socially optimal to reduce volume of credit and the level of foreign funding
Could private arbitrage resolve ex-post inefficient liquidation?

- Investors who have achieved safety could arbitrage
- Hold short-term bond until $t = 1$
- Buy demandable claims in a run under uncertainty
- Assume they have all bargaining power

None will choose to pursue arbitrage if

$$T - 1 > \gamma (1 - \delta) \frac{R}{\alpha}$$

- Impossible to lever up with cheap foreign funding
Induced runs

- Let domestic savers have some liquidity need
  - additional mass $\omega > 0$ of domestic savers
  - seek demandable debt, accept liquidity discount

- Rollover decision of domestic savers (under uncertainty)

$$\frac{\gamma(1 - \delta)}{\gamma(1 - \delta) + (1 - \gamma)\epsilon} \min \left\{ X^*, R(I^* - \frac{x}{\alpha} f^*) \frac{X^*}{\omega X^* + L^*} \right\} \geq x$$

- More foreign wealth induces even risk-tolerant savers to run!
  - (to avoid dilution, not to escape risk)
Safe intermediaries?

- Can an intermediary target safe assets?
- Foreigners would accept long-term senior debt if no asset risk
  - Assume no scarcity of safe assets
- Can MMMF commit to invest in safe securities?
  - Intermediaries have incentive to make riskier investment
  - Evidence: Kacperczyk and Schnabl (2013)
- No commitment possible: cannot attract safety-seeking funding
Global imbalances may generate financial fragility
  • driven by safety-seeking inflows
  • intermediated under optimal contracting
  • no bailouts or deposit insurance

Private incentive to target cheap but flighty foreign funding
  • Boosts domestic lending into marginal project
  • Leads to inefficient runs in solvent states
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Thank you!