ARE RESERVES AND PRECAUTIONARY LENDING COMPLEMENT OR SUBSTITUTE?

Romain Rancière (PSE, IMF, and CEPR)
A “common” view

- International Reserves became the prime vehicle of country insurance in the emerging and developing world.

- But this form of self-insurance has been criticized as inefficient, costly, and partly responsible for global imbalances.

- We should move from self-insurance to insurance because:
  - insurance is less costly than self-insurance.
  - This would reduce the negative externalities associated with global imbalances.
Challenging the common view

- Becker and Erhlich (JPE 1972)
  - **Mitigation**: reduction of the loss associated with a disastrous shock
  - **Protection**: reduction of the probability of a disastrous view.
  - **Main Result:**
    - **Pure Mitigation**: Fairly priced insurance is a better substitute to self-insurance (Market Completion)
    - **As soon as protection is introduced**, this is no longer true and no general results on substitution or complementarity.
      - Self-protection can reduce the price of mitigation-insurance.
      - Market protection can reduce the cost of self-protection, increase its effectiveness.
# Fund “Insurance” vs. Self-insurance

<table>
<thead>
<tr>
<th></th>
<th>Crisis Mitigation</th>
<th>Crisis Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self</strong></td>
<td>Reserves</td>
<td>Reserves</td>
</tr>
<tr>
<td><strong>Fund</strong></td>
<td>Stand-by Agreement</td>
<td>Precautionary Lending.</td>
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Example 1. Pure Crisis Mitigation

- Insurance and Self-insurance affect the output cost of a crisis.
- **In theory:** Actuarially-fair insurance leads to switch from self-insurance to insurance.
  - Risk-sharing across countries.
- **Caveat:** you need the insurer to be efficient ex-post in mitigating your loss.
- Experience of East-Asian Crisis. IMF Protection is not very effective → let’s increase self-insurance through more reserves
- Time-Varying Risk-Aversion. “behavioral” assumption
Baseline Model: Optimal Level of Reserves equal to 9.5% of GDP based on output cost equal to 6.5%, probability (10%)

Table 4. Output Cost of the 1997-1998 Asian Crisis and the Optimal Level of Reserves in South East Asia

<table>
<thead>
<tr>
<th>Country</th>
<th>Output cost of 1997-1998 sudden stop (in percent of GDP)</th>
<th>Optimal Level of Reserves to GDP (risk aversion =2)</th>
<th>Optimal Level of Reserves to GDP (risk aversion =10)</th>
<th>Actual Reserves to GDP (2005)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td>-14%</td>
<td>0.16</td>
<td>0.22</td>
<td>0.25</td>
</tr>
<tr>
<td>Malaysia</td>
<td>-17%</td>
<td>0.2</td>
<td>0.26</td>
<td>0.51</td>
</tr>
<tr>
<td>Philippines</td>
<td>-6%</td>
<td>0.09</td>
<td>0.15</td>
<td>0.16</td>
</tr>
<tr>
<td>Thailand</td>
<td>-17%</td>
<td>0.19</td>
<td>0.25</td>
<td>0.29</td>
</tr>
</tbody>
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Exemple 2. Self-Protection and Precautionary Lending

- Crisis Mitigation is not the only form of insurance.
- Self-protection against crises.
- Probability of a Crisis depends on:
  - Fundamentals (a)
  - Precautionary Lending (PL)
  - Reserves (R)
  - PR_CRISES=\(F(a-b*R-c*PL)\) [e.g: logistic model]
Exemple 2. Channels of Complementarity

- **Benefit Channel**
  - Complementarity: \( \frac{d\text{Proba}_\text{Crisis}}{dR} \cdot dP > 0 \)
  - Precautionary Lending puts you in a zone where the marginal benefits of additional reserves are greater.
  - Extreme Exemple: “Diamond Dybvig” self-fulfilling panics
    - \( \text{Pr}_\text{Crisis} = \text{PI} \) if \( R + PL < R_{\text{bar}} \)
    - \( \text{Pr}_\text{Crisis} = 0 \) if \( R + PL > R_{\text{bar}} \)
    - Precautionary Lending can change dramatically the decision from Exposed (and only crisis mitigation) to Covered.

- **Cost Channel**
  - By reducing the probability of a crisis, precautionary lending makes self-insurance less costly.
Exemple 2. Result

- Precautionary Lending and International Reserves Can be Complement.

- Precautionary Lending *subsidizes* Self-Protection
Exemple 3. Moral hazard prevention

- Well-known result. Self-protection reduces the cost of market insurance.
- Eligibility to precautionary lending arrangement depend on some degree of self-protection one measure of international reserves.
- Reserves as a “collateral” to reduce moral hazard problems.
- Once again precautionary lending and international reserves can be complement.
- Note: similar point on complementarity domestic saving and FDI. (Aghion et al. (2009))
Conclusion (I)

- The view that generalizing Flexible Credit Lines or other form of precautionary lending will reduce international reserves can be misleading.

- Other problems with FCL-type instrument.
  - Sovereignty Issue.
    - Reserves cannot be seized but FCL can be canceled.
  - Risk of losing eligibility
  - A country can use its reserves even if policy framework needs to deviate from model.

- **IMF: A Global Bank for Reserves.**
- **Issue Reserve Deposits (aka. Voluntary Reserves)**
- **Pooling of Reserves: Liquidity Management.**
  - Higher Interest Rate on Reserve Deposits
  - No Liquidity Risk.
- **Trade of Reserve Deposits: Insurance Role.**
  - Short Sale of Reserve Deposits i.e. borrowing.
  - Discipline. You need to save (deposit reserves) in order to borrow.
    - Multiple of voluntary reserves
  - IMF Resources: Cover a global short sale (a deposit run)