Optimal Policy for Macro-Financial Stability

Gianluca Benigno\textsuperscript{1}  
Huigang Chen\textsuperscript{2}  
Christopher Otrok\textsuperscript{3}  
Alessandro Rebucci\textsuperscript{4}  
Eric R. Young\textsuperscript{5}

\textsuperscript{1}LSE and Princeton  
\textsuperscript{2}MarketShare Partners  
\textsuperscript{3}University of Missouri and Federal Reserve Bank of St Louis  
\textsuperscript{4}Johns Hopkins University and IDB  
\textsuperscript{5}University of Virginia

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**Motivation**

- Global financial crisis proved very costly to resolve
  - Great recession in the US
  - Near-death experience in Europe
  - Strong and volatile capital flows in and out of emerging economies
Debate on the role of policy for financial stability
- Consensus before the crisis: intervene only during crises (e.g., Bailouts)
- Current view: intervene before crises (e.g., Macro-prudential policies)

Key questions:
- When should policy makers intervene?
- Which policy tools should they use?
This paper

- Develop a framework to study the optimal stabilization problem before AND during financial crises
- DSGE model with occasionally binding financial friction: the crisis event is endogenous and nested in a regular business cycle
- This requires the numerical solution of an optimal policy problem in which policy functions are not differentiable
Related literature

- Literature on financial frictions
- Methodology: Klein, Krusell, and Rios-Rull (2009)
Focus on a simple model: Mendoza (2002)

- Small open economy
- Two-goods that are consumed and produced
- A liquidity constraint that limits consumers’ borrowing to a fraction of their total income
Why is there scope for government intervention?

- There is a pecuniary externality when the constraint binds:
  - Consumers do not take into account the effect of their choices on the price of collateral
  - This affects their ability to borrow
  - Which in turn affects the price of collateral
  - And so and so forth ...
  - Consumers and producers’ decisions can be affected by this externality even when the borrowing constraint is not binding
Role and design of macroprudential policies depends on the effectiveness of crises management policy (interaction between ex ante and ex post policy interventions is crucial).

When price support policies are costly or not effective, macroprudential becomes desirable (A new, intrinsic rationale for macroprudential policies).

How credit is allocated matters as much as total size of credit flows.
Outline

- Simplified version of the model
- Key results
- Some evidence
- Conclusions
Preferences

- Utility function:

\[ U^j = E_0 \sum_{t=0}^{\infty} \{ \beta^t \log (C^j) \} , \quad (1) \]

- Consumption basket and price index:

\[
C_t = \frac{(C_t^T)^{\omega} (C_t^N)^{1-\omega}}{\omega\omega (1 - \omega)^{1-\omega}}
\]

\[
P_t = \left( P_t^N \right)^{1-\omega},
\]

with \( P_t^T = 1 \).
Constraints

- **Budget constraint:**

  \[ C_t^T + P_t^N C_t^N + B_{t+1} = Y_t^T + P_t^N Y_t^N + (1 + r) B_t, \]  

  where \( B_{t+1} \) denotes the bond holding at the end of period \( t \), and \( 1 + r \) is a given world gross interest rate with \( \beta (1 + r) < 1 \).

- **International Borrowing constraint:**

  \[ B_{t+1} \geqslant -\frac{1 - \phi}{\phi} \left[ Y_t^T + P_t^N Y_t^N \right]. \]

- Crisis occurs when constraint binds endogenously.
Allocations

Debt

Tradable Consumption

Nontradable Price

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Government Policy

- Three policy instruments:
  - Macroprudential tool (e.g., Capital control): $\tau^B_t$
  - Price support tool (e.g., Real exchange rate targeting): $\tau^N_t$ or $\tau^T_t$
- Balanced budget:
  - Non distortionary taxation
    \[ T_t = \tau^N_t P^N_t C^N_t \text{ or } T_t = \tau^B_t B_{t+1} \]
  - Distortionary taxation
    \[ \tau^B_t B_{t+1} = \tau^N_t P^N_t C^N_t \]
- Ramsey approach: maximizes agents' utility subject to resource constraint, FOCs of competitive equilibrium, and government budget constraint conditional on policy tools available
Comparing different tools

- R1: Macroprudential (Capital control) with lump-sum transfers/taxes achieves SP (Korinek, 2010; Bianchi, 2011)
- R2: Price support (Real exchange rate) with lump-sum transfers/taxes achieves UE
- **If costless**, price support policy dominates macroprudential policy
Relative price determination:

\[ P_t^N \left(1 + \tau_t^N \right) = \frac{(1 - \omega)}{\omega} \left( \frac{C_t^T}{C_t^N} \right) . \]  

When the constraint does not bind \( \tau_t^N \) is neutral (Euler equation and resource constraint determines tradable consumption)

When the constraint binds, \( \tau_t^N \) can affect the price of collateral, and hence the consumption of tradable goods
Costly price support (Distortionary financing)
Competitive Equilibrium (CE) and Optimal Policy (OP)

- Debt: $B(t)$
- Tradable Consumption: $B(t)$
- Nontradable Price: $B(t)$

Graphs show the comparison between CE and OP for debt, tradable consumption, and nontradable price.
### Welfare Gains and Crisis Probabilities

#### Ergodic Averages

<table>
<thead>
<tr>
<th></th>
<th>Debt to Income</th>
<th>Prob. of Crisis</th>
<th>Welfare Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE</td>
<td>−29.2%</td>
<td>6.7%</td>
<td>NA</td>
</tr>
<tr>
<td>SP</td>
<td>−28.4%</td>
<td>1.2%</td>
<td>0.41%</td>
</tr>
<tr>
<td>UE</td>
<td>NA</td>
<td>0.0%</td>
<td>33.8%</td>
</tr>
<tr>
<td>OP</td>
<td>−30.5%</td>
<td>4.9%</td>
<td>1.10%</td>
</tr>
</tbody>
</table>

- Welfare gains from OP are quite large.
- The economy with OP borrows more than the CE and macroprudential policies remain desirable.
Production economy: the same externality has effect on consumption and production choices.

Logic of the results extend to production economy: effectiveness of ex-post policies determine optimal design of ex ante policies.

Price support policies tend to dominate macro prudential policies.
What do countries do?

- Consider Brazil and Mexico before and after Lehmann’s collapse: they had balance sheet mismatches in the corporate sector and used unconventional policy tools before and after the crisis.
Brazil and Mexico used a multiplicity of tools before and during crises.
Caveats and areas for future research

- General results extends to cases when the constraint depends on asset prices or is forward looking.
- Simple framework in which there is no policy trade off: with multiple distortions there is an intrinsic rationale for macroprudential policies even if price support is costless (e.g., price and financial stability).
Conclusions

- Study optimal stabilization policy in an environment in which financial crises are nested in regular cycles

- Role and design of macroprudential policies depends on the effectiveness of crisis management policies
  - When price support policies are costly, there is an intrinsic rationale for macroprudential policies

- Where credit goes is as important as how much credit flows ...
THANK YOU