Macroprudential Policy: Promise & Challenges

(Effectiveness, Interaction & International)

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The promise

- Macroprudential policy (MPP) aims to weaken credit booms in “good times” so as to reduce frequency & severity of financial crises
- Credit booms are infrequent, but end in deep, protracted crises (Mendoza & Terrones (2012)):
  1. Credit booms occur with 2.8% frequency
  2. 1/3rd end in banking or currency crises.
  3. 3 years after credit peaks, GDP is 5% to 8% below trend
- Models with Fisherian collateral constraints justify MPP based on a market failure due to pecuniary externalities in collateral valuation
  1. Quantitative models show MPP is very effective

Fisherian models & pecuniary externalities

- Occasionally binding collateral constraints with collateral valued at market prices:

$$\frac{b_{t+1}}{R_t} \geq -\kappa_t f(p_t)$$

1. Debt-to-income (DTI) models: $f\left(p_t^N\right) = y_t^T + p_t^N y_t^N$
2. Loan-to-value (LTV) models : $f(q_t) = q_t k_{t+1}$

- Market price of collateral determined by aggregate allocations: $f\left(p_t^N(C_t^T, C_t^N)\right)$, $f(q_t(C_t, C_{t+1}))$

- Pecuniary externality: Agents choose debt in “good times” ignoring price responses in “crisis times”

Overborrowing & optimal MPP

- Decentralized Euler eq. for bond holdings:

$$u'(t) = \beta R_t E\left[u'(t+1)\right] + \mu_t$$

  - In normal times μ_t=0 => standard Euler equation

- But for a planner internalizing the externality:

$$u'(t) = \beta R_t E\left[u'(t+1) + \mu^*_{t+1}\kappa_{t+1} f'(t+1)\frac{\partial p_{t+1}}{\partial \tilde{C}_{t+1}}\frac{\partial \tilde{C}_{t+1}}{\partial b_{t+1}}\right]$$

- If social MC of debt exceeds private MC, private agents "overborrow" in good times
  - Optimal MPP: debt taxes, LTV ratios or capital req.

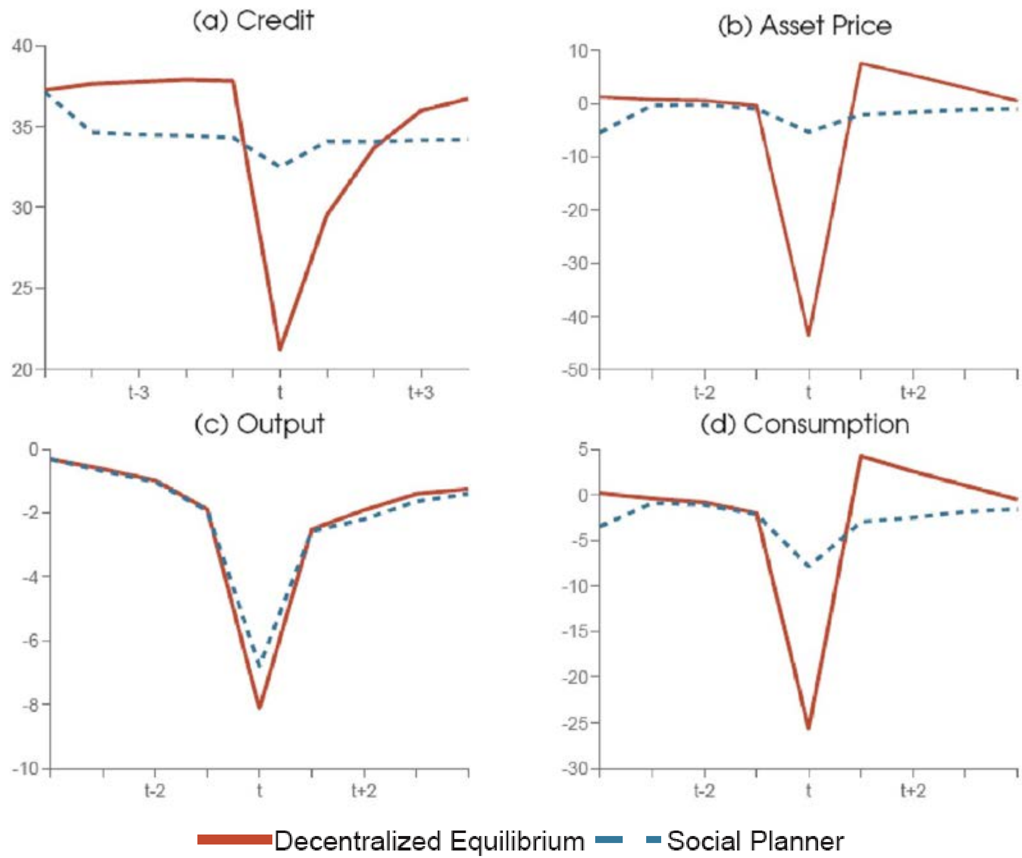
The challenges

1. *Complexity & credibility*: Optimal MPP follows complex rules and is time-inconsistent under commitment, hence lacks credibility (Bianchi & Mendoza (2017), JPE)
2. *Coordination failure with monetary policy*: Costly inefficiencies due to Tinbergen's rule violations and strategic interaction (Carrillo et al. (2017))
3. *Are capital controls justified?:* Most models do not justify discriminating credit sources, but ignore liability dollarization (Mendoza & Rojas (2017))

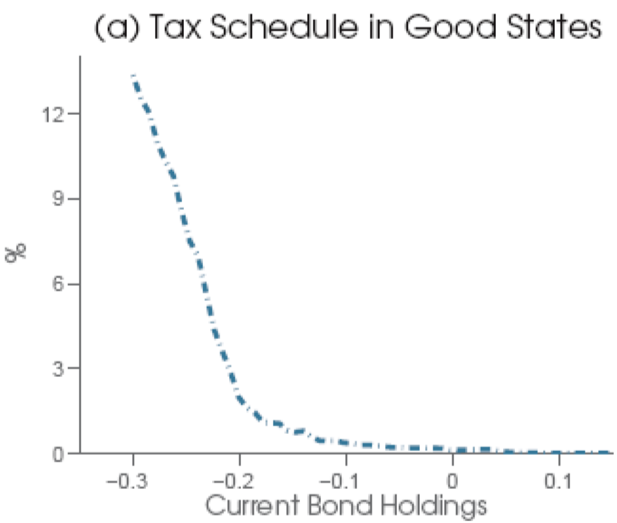
1. Time inconsistency (LTV case)

- When μ_t >0, the planner views the effects of the choice of b_{t+1} on C_{t+1}, and hence on q_t, differently depending on its ability to commit
- *Commitment:* Promise lower C_{t+1}, to prop up q_t, because $q_t(C_t, C_{t+1})$ is decreasing in C_{t+1}, but at t+1 this is suboptimal=> time inconsistency
- *Discretion:* The planner of date t considers how its choices affect choices of the planner of t+1 (needs to align incentives)

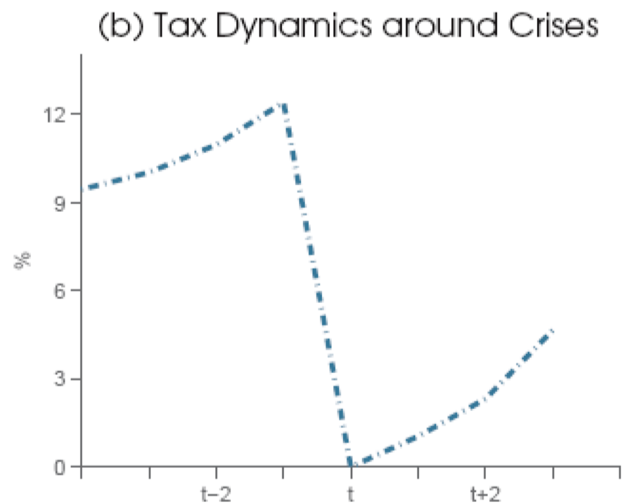
Effectiveness of Optimal (TC) policy: Bianchi-Mendoza LTV model



Complexity



(a) Tax Schedule in Good States
%
12
9
6
3
0
−0.3
−0.2
−0.1
0
0.1
Current Bond Holdings



(b) Tax Dynamics around Crises
%
12
9
6
3
0
t−2
t
t+2

Simpler rules are much less effective

	Decentralized Equilibrium	Optimal Policy	Best Taylor	Best Fixed
Welfare Gains (%)	–	0.30	0.09	0.03
Crisis Probability (%)	4.0	0.02	2.2	3.6
Drop in Asset Prices (%)	−43.7	−5.4	−36.3	−41.3
Equity Premium (%)	4.8	0.77	3.9	4.3
Tax Statistics				
Mean	–	3.6	1.0	0.6
Std relative to GDP	–	0.5	0.2	–
Correlation with Leverage	–	0.7	0.3	–

Financial Taylor Rule: $\tau = \max[0, \tau_0(b_{t+1}/\bar{b})^{\eta_b} - 1]$

2. Coord. failure: Carrillo et al. (2017)

- MP/FP interaction:
  1. DSGE-BGG model with risk shocks
  2. Calvo pricing => inefficiencies in goods markets
  3. Costly monitoring =>Inefficiencies in credit-capital market
  4. MP (FP) instrument affects target & payoff of FP (MP)

- MP follows simple or augmented Taylor rule:

$$(1+i_t) = (1+i)\left(\frac{1+\pi_t}{1+\overline{\pi}}\right)^{a_\pi} \qquad (1+i_t) = (1+i)\left(\frac{1+\pi_t}{1+\overline{\pi}}\right)^{\hat{a}_\pi}\left[E_t\left(\frac{r^k_{t+1}}{R_t}\right)\Big/\left(\frac{r^k}{R}\right)\right]^{-\hat{a}_r}$$

- FP rule targets credit spread using a lending subsidy:

$$\tau_{f,t} = \tau_f\left[E_t\left(\frac{r^k_{t+1}}{R_t}\right)\Big/\left(\frac{r^k}{R}\right)\right]^{a_r}$$

Relevance of Tinbergen's rule

Regime	Optimized Elasticities a_π	a_{rr}	$\breve{a}_{rr}$	ce v. DRR	Decomp Full ce
Dual rules (Best Policy)	1.27	2.43	0	-	3.85%
Augmented Taylor rule	1.27	0	0.36	-138bp	5.23%
Standard Taylor rule	1.75	0	0	-264bp	6.49%

1. Large welfare costs of risk shocks in general,
2. …but much larger under STR & ATR than DRR
3. STR & DRR are "tight money-tight credit" regimes, with larger fluctuations and large efficiency losses due to costly monitoring

Relevance of strategic interaction

Regime x $v.$ regime y	Param. values of x a_π	a_{rr}	ce v. DRR	Decomp. Full ce
Nash	2.12	1.69	30bp.	4.15%
Cooperative ($\varphi = 0.5$)	1.41	2.67	4bp.	3.89%
Cooperative ($\varphi^* = 0.23$)	1.33	2.10	1bp.	3.85%
DRR (Best Policy)	1.27	2.43		3.85%

1. Welfare is much lower under Nash than Cooperative
2. Nash is again a tight money-tight credit regime, but still dominates STR and ATR
3. For SOE's, since *i* is largely exogenous, separate financial policy rules are even more relevant

3. Capital controls and MPP

- Most Fisherian models justify regulating credit, NOT discriminating foreign v. domestic creditors
  - Some do but focusing on heterogeneous borrowers
  - In standard SOE-MPP models, domestic regulation & capital controls are equivalent (e.g. Bianchi (11))
  - Debt & collateral are in different units, but financial assets & liabilities are in same unit (e.g. T goods).
- Mendoza-Rojas: risk-neutral banks intermediate inflows in T units into domestic loans in CPI units
  - Lenders (borrowers) care for ex ante (ex post) int. rate
  - Optimal MPP is again time-inconsistent
  - Mix of capital controls and domestic debt taxes needed for optimal time-consistent policy

Conclusions

- *Promise*: Progress with quantitative models of fin. crises that illustrate MPP effectiveness
- *Challenges*: Optimal MPP is complex, needs to tackle credibility and coordination with MP
  - **Carefully evaluated dual rules are necessary to avoid welfare-reducing outcomes.**
- Other important hurdles: fin. innovation, information, heterogeneity, int’l coordination, securitization, interconnectedness