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การนำเสนอผลงานวิจัยเรื่อง
“Macprudential Policy in a Bubble-Creation Economy”

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Macroprudential Policy in a Bubble-Creation Economy

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Motivation and Research Question

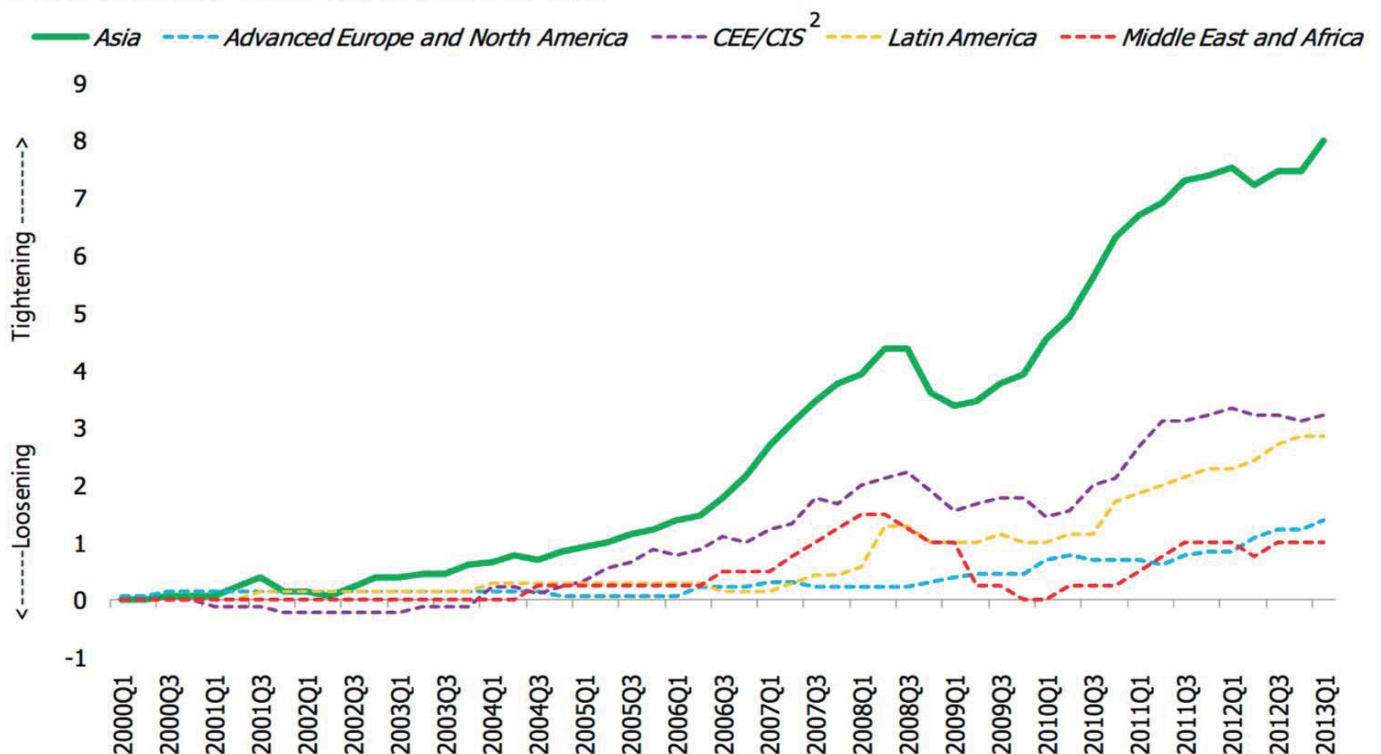
- **Motivation:**
 - The practice of macroprudential policy has moved ahead of associated theory.
 - Gap between practical macroprudential policy and theory of rational bubbles.
- **Research question:** How does Loan-To-Value policy (LTV) theoretically affect an economy in a rational bubble framework?

On macroprudential tools

- Committee on the Global Financial System: “Experiences with the ex ante appraisal of macroprudential instruments”, CGFS Papers No. 56 (July 2016).
- “...new macroprudential instruments have been introduced or existing ones have been recalibrated with a macroprudential perspective despite the fact that the conceptual and analytical underpinnings of macroprudential policy are at an early stage of development.” (p.3)

Figure 7: Macroprudential Policies: Cumulative Actions by Region

(Average per country in each region; 2000:Q1-2013:Q1)¹



Source: IMF staff calculations.

¹ Index summing up housing-related measures, credit measures, reserve requirements, dynamic provisioning and core funding ratio. Simple average across countries within country groups.

² Central and Eastern Europe and Commonwealth of Independent States.

Source: Zhang and Zoli (2014).

LTV ratio is the type of measure that has been used most actively among housing-related measures



Source: Zhang and Zoli (2014).

On macroprudential tools

- In a nutshell, macroprudential tools are designed to deal with leaning against the wind of 'financial cycle' (see BIS research esp. by C. Borio)
- Key properties of financial cycle (Borio, 2013)
 1. Its most parsimonious description is in terms of the behaviour of private-sector credit and property prices.
 2. The financial cycle has a much lower frequency than the traditional business cycle.

Renewed interests on ‘economic theory of asset price bubbles’

- Special sections on the ‘economic theory of bubbles’ in the *Journal of Mathematical Economics* (Aug 2014 and Aug 2016)
- Symposium on ‘bubbles, multiple equilibria, and economic activities’ in the *Economic Theory* (Feb 2016)
- Supplement issues on ‘asset price fluctuations and economic policy’ in the *Journal of Monetary Economics* (Dec 2015).

Review on Rational Bubbles

- First generation where bubbles crowd out investment by competing with capital over savings
 - Tirole (1985), Weil (1987), Grossman & Yanagawa (1993)
- Second generation where bubbles crowd in investment in the presence of financial friction by relaxing the credit constraint
 - Caballero & Kishnamurthy (2006), Kocherlakota (2009), Farhi & Tirole (2012), Martin & Ventura (2012), Hirano & Yanagawa (2013), Miao, Wang, & Zhou (2015), Kunieda and Shibata (2016)

Our paper

- Based on Martin and Ventura (2016)
 - Rational bubbles in presence of credit market fiction
- Two types of collateral
 - Fundamental collateral
 - Bubbly collateral
- Allowing us to distinguish between structural parameter (e.g. imperfect enforcement mechanism) and policy variable (due to macroprudential tool)
 - Policy effectiveness depends on the degree of financial fiction

Review on Rational Bubbles

- Traditionally, the evolution of bubbles is limited to

$$b_{t+1} = \frac{R_{t+1}}{\gamma} b_t$$

- Martin & Ventura (2012, 2014) introduce bubble-creation process which relaxes above condition as follows

$$b_{t+1} = \frac{R_{t+1}}{\gamma} b_t + b_{t+1}^N$$

where $\{b_{t+1}^N\}_{t=0}^{\infty}$ is a common belief among agents or is referred to as market sentiment.

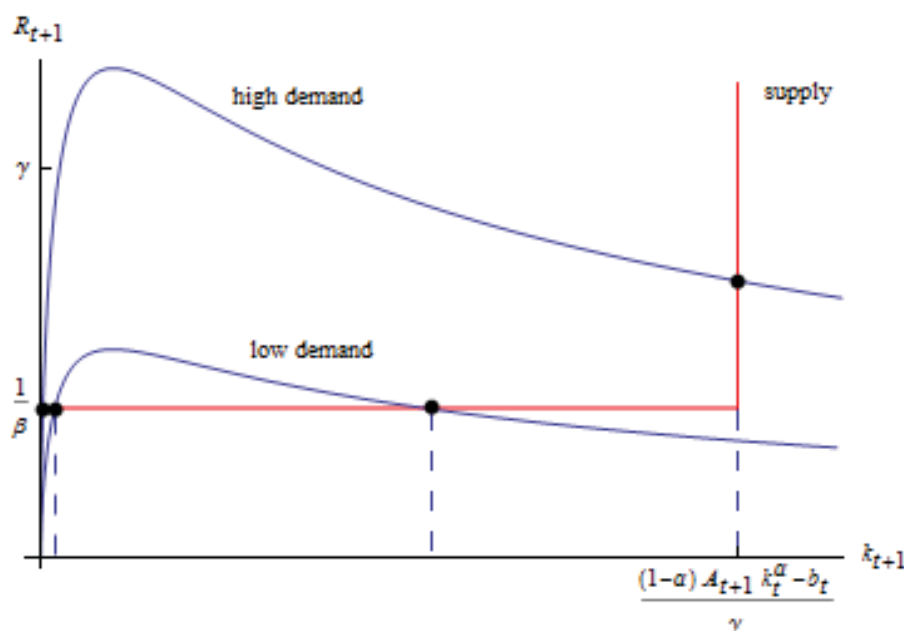
Modified Martin & Ventura (2016)

- Two-period-lived OLG model with heterogeneous agents.
- Savers: work when young and supply their savings.
- Entrepreneurs:
 - borrow to invest in capital and buy bubbles
 - are subject to credit constraint as financial friction ϕ limits the future income pledgeability
 - Use bubbly collateral to raise credit limit.
- Modification: LTV ratio λ is imposed on bubbly collateral as follows

$$R_{t+1}L_t \leq \phi[A_{t+1}K_{t+1}^\alpha(\gamma^{t+1}N_{t+1})^{1-\alpha}] + \lambda B_{t+1}$$

Capital Market Equilibrium

- Given k_t, b_t , and b_{t+1}^N , k_{t+1} and R_{t+1} are determined as follows:

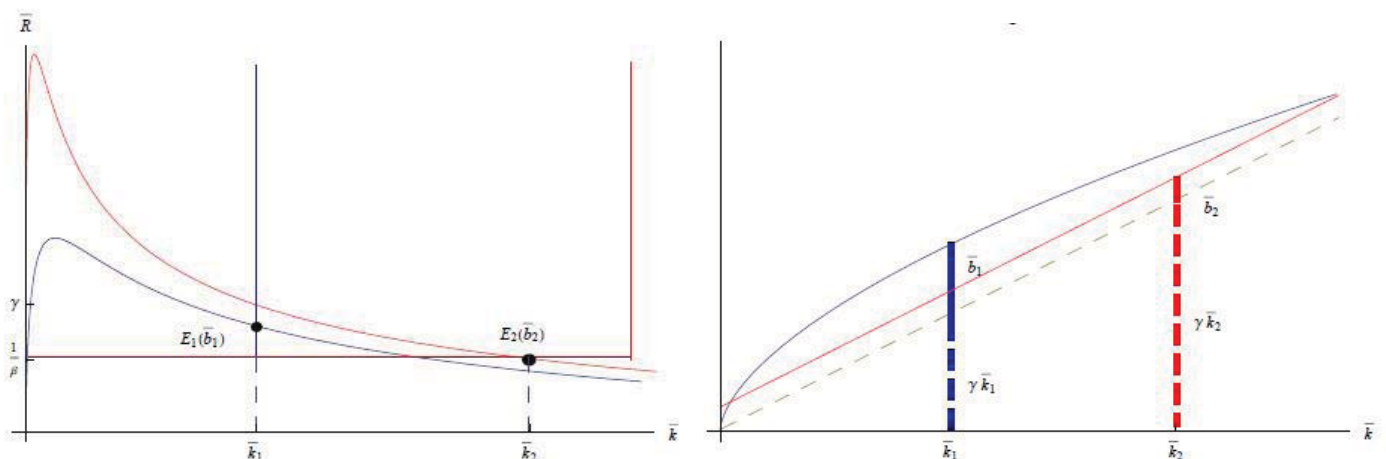


Discussion on Short-Run Effect of LTV

- Effects of LTV ratio policy:
 - Pledgeable part of bubbles raises capital investment
 - The remaining part becomes a burden competing with capital investment.
- LTV ratio policy instead generates multiplicity: new source of economic fluctuation.
- This multiplicity makes chaotic dynamics possible.

Steady State Analysis

- Multiple steady states exist regardless of LTV ratio policy: high-capital vs. low-capital steady states.



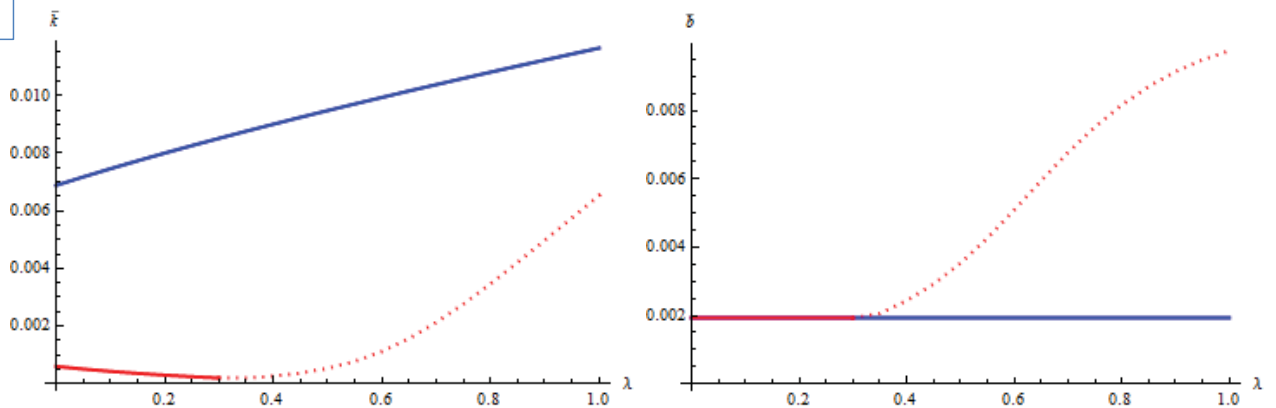
Long-Run Effect of LTV

- Lowering LTV ratio has different effects on each steady state:

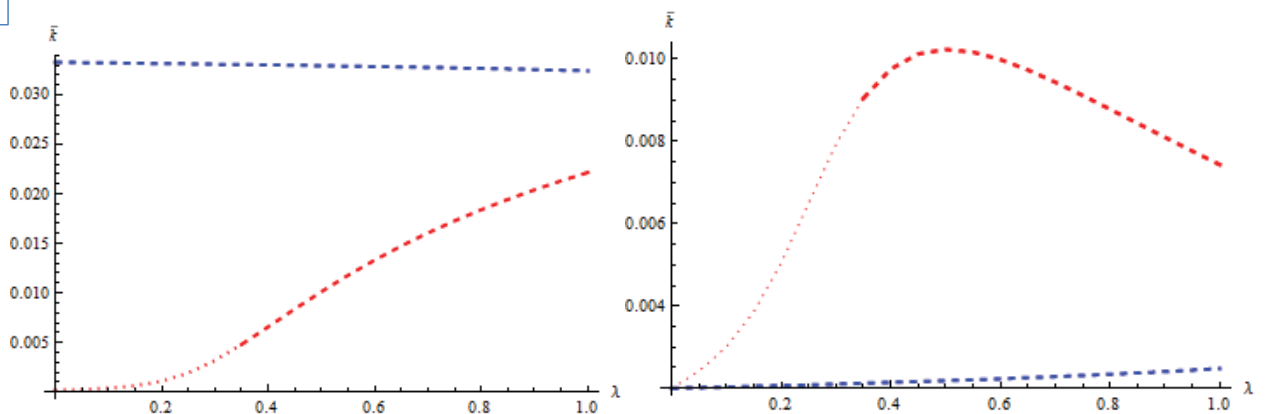
Steady state	Vertical supply	Horizontal supply
High-capital	$\bar{k}$ rises, $\bar{b}$ falls	$\bar{k}$ falls, $\bar{b}$ unchanged
Low-capital	$\bar{k}$ falls, $\bar{b}$ ambiguous	$\bar{k}$ rises, $\bar{b}$ unchanged

- The existence of low-capital steady state becomes the risk for LTV ratio policy in the long run.

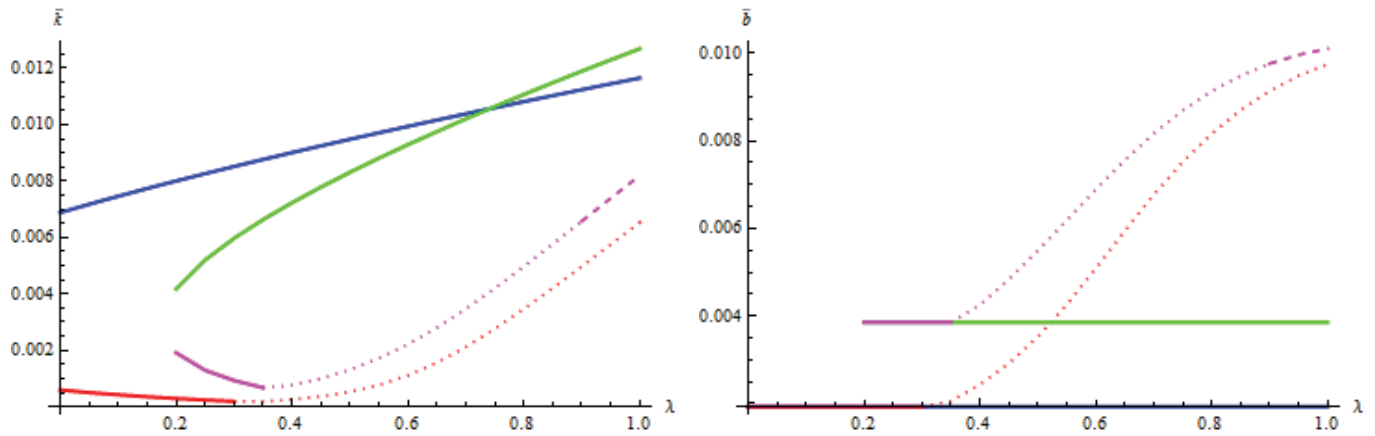
High Friction



Low Friction

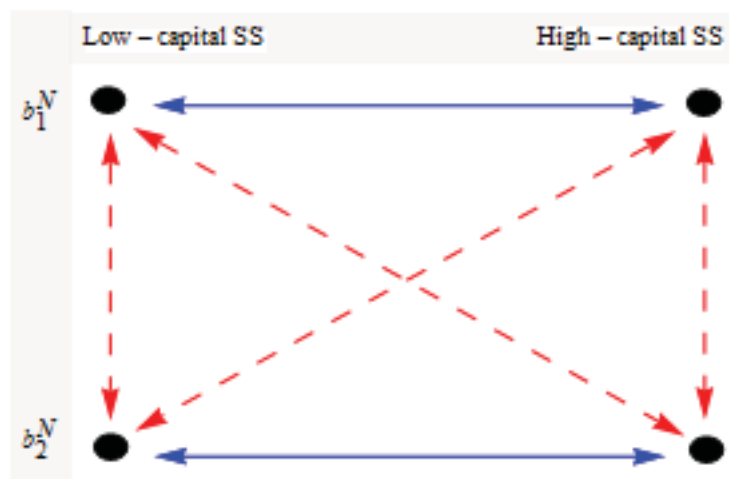


Market Sentiment



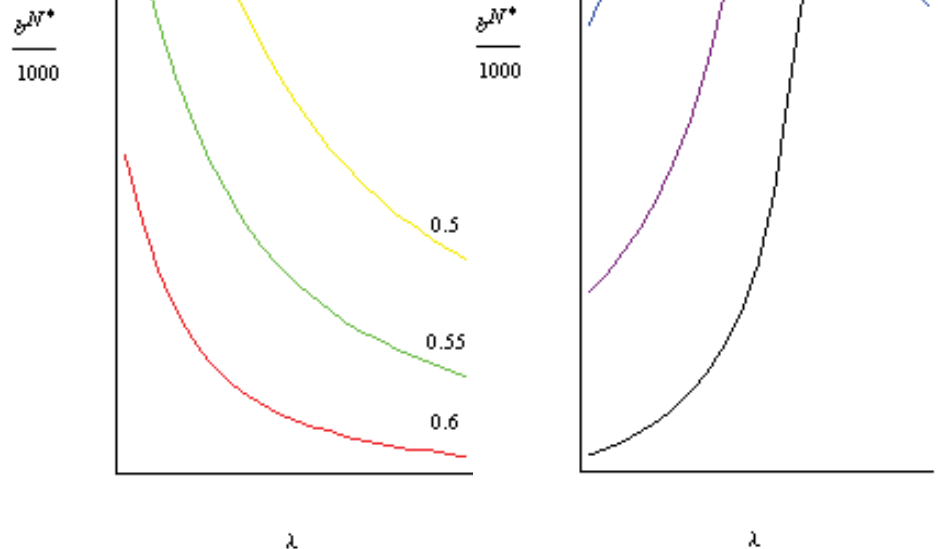
Fluctuation Decomposition

- Sunspot equilibria can be constructed within or across market sentiments.



Fluctuation across Market Sentiments

- Lowering LTV ratio can affect measure of set of consistent market sentiment:



Conclusion

- We cast doubt on the effectiveness of macroprudential LTV ratio policy on stabilizing bubbly economy:
 - it introduces new kind of short-run multiplicity.
 - the long-run effects on bubbles and capital are rather ambiguous.
- However, it can help reduce certain long-run fluctuation especially in an economy with high financial friction:
 - it may create unique stable steady state, which has high capital level, within a given market sentiment.
 - it confines the set of consistent market sentiment in the economy with high financial friction.