Macro-prudential Policy in a Fisherian Model of Financial Innovation

Dan Cao
Georgetown University

Paper presented at the 12th Jacques Polak Annual Research Conference
Hosted by the International Monetary Fund
Washington, DC—November 10–11, 2011

The views expressed in this paper are those of the author(s) only, and the presence of them, or of links to them, on the IMF website does not imply that the IMF, its Executive Board, or its management endorses or shares the views expressed in the paper.
Discussion of "Macro-prudential Policy in a Fisherian Model of Financial Innovation" by Bianchi, Boz, and Mendoza

Dan Cao

Georgetown University

November 16, 2011
Motivation

- A quantitative framework to study macro-prudential policies in an environment with both financial and information frictions.
- Macro-prudential policies can alleviate **pecuniary externalities** (Lorenzoni 2008, Stein 2011, Bianchi 2010, Bianchi and Mendoza 2010, Jeanne and Korinek 2010 etc.)
- Pecuniary externality is stronger under imperfect information (Boz and Mendoza 2010)
- This paper: macro-prudential policies in Boz and Mendoza’s environment. (Angeletos and La’o 2011)
- The interaction between the effects of imperfect information and pecuniary externality in influencing macro-prudential policies
Decentralized Equilibrium

- Sequence of allocations \([c_t, k_{t+1}, b_t]_{t=0}^{\infty}\) and prices \([q_t]_{t=0}^{\infty}\) such that the representative agent maximizes

\[
\max_{\{c_t, k_{t+1}, b_{t+1}\}} E_0^s \left[ \sum_{t=0}^{\infty} \beta^t \frac{c_t^{1-\sigma}}{1-\sigma} \right]
\]

subject to

\[
q_t k_{t+1} + c_t + b_t \frac{b_{t+1}}{R_t} = q_t k_t + b_t + \epsilon_t Y(k_t)
\]

\[- b_t \frac{b_{t+1}}{R_t} \leq \kappa_t q_t k_{t+1}\]

and the land market clears

\[k_t = 1.\]

- \(\kappa_t \in \{\kappa^h, \kappa^l\}\) Markov, \(\kappa^h = 0.926\) and \(\kappa^l = 0.642\) unknown transition matrix

- Pricing functions \(q_t^{DEL}(b, \epsilon, \kappa)\) versus \(q^{DEF}(b, \epsilon, \kappa)\)
The social planner’s problem

- The social planner solves

\[ E_0^i \left[ \sum_{t=0}^{\infty} \beta^t \frac{c_t^{1-\sigma}}{1-\sigma} \right] \]

subject to

\[ c_t + \frac{b_{t+1}}{R_t} = b_t + \epsilon_t Y \]  \hspace{1cm} (1)

\[ -\frac{b_{t+1}}{R_t} \leq \kappa_t q_t \cdot 1 \]

\[ q_t = q^i_t (\epsilon_t, b_t, \kappa_t) \]

- Three possibilities: choice of \( E_0^i [.] \) and choice of \( q^i_t (\epsilon_t, b_t, \kappa_t) \).
The social planner’s problems: Three possibilities

\[ q_t^i (\epsilon_t, b_t, \kappa_t) = q_t^{DEL} (\epsilon_t, b_t, \kappa_t) \quad q_t^{DEF} (\epsilon_t, b_t, \kappa_t) \]

\[ E_0^i [.] = E_0^s [.] \]

SP1

SP2

SP3
Quantitative Result: Interaction between Pecuniary Externality and Information
Which stand should we take on the information set of the social planner?

- SP1 versus SP2: Do policy makers have better information than the private agents?
- Strong message: the dynamics in SP1 and DE are very close to each other in the baseline model.
- Sensitivity Analysis: Initial degree of optimism
- SP2: General lesson with the planner being more cautious than the representative agent.
Which stand should we take on the information set of the social planner?
Which pricing function?

- In Lorenzoni (2008) or Bianchi (2010), current prices are determined by the current choice variables of the representative agents.
- Here, the current land price is forward-looking and thus is determined by the current and all the future choice variables

\[ q_t = q_t \left( \{\epsilon_{t'}, b_{t'}, \kappa_{t'}\}_{t' \geq t} \right). \]

- Example: Pricing of Asset Backed Securities
- Simplifying assumption: \( q_t = q^{DEL}(\epsilon, b, \kappa) \) or \( q^{DEF}(\epsilon, b, \kappa) \)
- SP2 versus SP3: \( q^{DEL}(\epsilon, b, \kappa) \) or \( q^{DEF}(\epsilon, b, \kappa) \) generates significant quantitative differences.
Conclusion

- Excellent paper that raises an important normative question
- Transparent quantitative framework to study macro-prudential policies
- Practical issues regarding determining and implementing the optimal policies