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Discussion on paper Macro and micro prudential policies: sweet and lowdown in a credit network agent based model by Ermanno Catullo, Federico Giri, and Mauro Gallegati

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Summary of the paper

- Paper exhibits an agent-based model firms and banks as well as a prudential policy set by financial stability authority. Model is calibrated to data and simulations are run to find outcomes of the model.
  - Micro-prudential policy: Fixed capital requirement applying on each bank.
  - Macro-prudential policy: Time-variant capital requirement based on growth in aggregate credit supplied in the economy, applying on each bank.
- A ’meso’ prudential policy combining both micro and macro prudential views is introduced.
  - Argument: Although macro prudential policy stabilizes the economy (in terms of output and credit growth volatility as well as crisis probabilities), the instability is transmitted to the banking system by increasing bank capital volatility.
  - ’Meso’ policy: link capital requirement to bank connectivity in the credit network.
- Simulation proposed outcome of the ’meso’ policy: balance between stabilizing the economy and banking system.

Initial thoughts

- Intriguing approach in attempt to harmonize micro and macro prudential approaches.
- Relevant topic from the perspective of policy work.
- Nice to see work based on agent-based model and credit network in contrast to standard DSGE models.

Key questions

Question 1

- Why is the increased bank system fragility in macro prudential policy setting not visible in probability of credit crisis? What are the implications in model's context of the increased volatility of banks' net worth?

Question 2

- In terms of possible policy recommendation, how realistic would it be to implement a bank dependent capital ratio based on the connectivity measure?
  - How to define a network: banking jurisdiction, global?
  - Would need information about all the agents in the credit network and be able to net the connections between banks. Anonymity issue?

Key questions, condt.

Question 3

- Page 19: ”We calibrated the model in order to reproduce realistic level of output volatility and aggregate leverage”.
- Are model parameters, especially those not directly related to different prudential policies, calibrated again with each prudential policy setting or only once with baseline micro prudential setting?
- Since calibration is done so that certain range of output volatility is targeted, how can it also be used as a measure of the stability of the simulated system?

Other questions

- The ’meso’ prudential policy is set as a hard threshold: if the connectivity measure surpasses some value, capital requirement is increased.

  ➔ How does this affect banks’ incentives in the model?

  ➔ Would be interesting to see effects with a soft threshold that eases in.

- How is the value $\delta_v = 0.15$ decided?
- Ratio of banks vs. firms seems quite high, justifications for this?
- Crisis probability (either of output or credit) defined ”as the frequency of a reduction lower than the -0.02 per cent” => reduction in the levels of more than 2%? Or in the growth rates in %-points?

Other questions, condt.

- Equation 25 describes the evolution of the capital requirement in macro prudential policy, ”similar in spirit to the one proposed in Angelini et al. (2014)”. In this paper the term ν on the RHS is once-lagged.
  - In your paper the RHS is non-lagged. If this is not a typo, then indeed $\nu = \bar{\nu} = 9\%$ but then the capital requirement adjustment parameter ρ plays no role.
  - If this is a typo and it should be ν_{t-1}: in simulation results micro prudential policy seems to be have given as a special case of equation 25 where χ=0. This yields following dynamics for the capital requirement: $\nu_t = (1-\rho)\,\bar{\nu} + \rho\nu_{t-1}$. This seems to be effectively the same as the micro prudential policy ν only when enough time has passed so that the process has converged, which I assume to be the case in your simulations?