Discussion of:
"Banks, Market Organization and Macroeconomic Performance: An agent-based computational analysis"
by Quamrul Ashraf, Boris Gershman and Peter Howitt

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The views expressed in this discussion are those of the author only and are not necessarily shared by the Federal Reserve Board, the Committee, or any of the staff. All errors are mine.
What I will be talking about:

- What the authors are after
- The approach: why agent-based computational economics (ACE)?
- Review the punchlines of the paper
- Outline the strengths and weaknesses (as I see them)
- Offer conjectures on the "bad-time results" curiosum
- Conclude

My punchline: this is an ambitious and promising paper!
The question(s):

- What is the role of banking in stabilizing the economy, damping shocks?
- Can banking itself be a source of problems? That is, is more banking always a good thing?
- What regulatory tools are "welfare improving"?
Why ACE (and why not DSGE models)?.

- DSGE models—especially linearized ones—are like Hollywood movies: a little bit of drama followed by the inevitable happy ending
- Real-world economic dynamics look complex: bubbles, fads & herding
- The Walrasian auctioneer does not work for free
- Attractive features of ACE:
  - Organic, petri-dish approach to economic evolution
  - Agents are heterogeneous, and all shocks are individual
  - Agents are boundedly rational and follow simple rules
  - General disequilibrium & short-side rules
  - Entry and exit could be socially costly as well
Authors and their agents, both hard at work...

- \( m = 5 \) banks
- \( n = 50 \) goods
- \( n(n - 2) = 2400 \) individual agents
- Each period divided into nine subperiods
- 5,000 runs \( \times \) 70 years \( \times \) 48 weeks/year \( \approx \) 1.7 million observations
- Each run takes about 11.5 seconds \( \approx \) 16 hours per experiment
The punchlines

- Solid, prudent banks are a good thing for the economy at the median economic performance.
- Making those banks "risky" does remarkably little to median economic performance.
- But strong non-linearities manifest themselves in a small proportion of runs.
- And banking does matter, and quite a lot, in extreme draws.
- Two regulatory policies have noteworthy effects on outcomes: LTVs and restrictions on dividend payouts.
Taking on orthodoxy: solid punches and glancing blows.

There is lots to like, but a few things miss (at least for me):

- **Solid punches**
  1. Intricate & detailed model, with sensible behavioral assumptions
  2. Thorough calibration
  3. Well posed questions, often with answers; e.g. banks usually help but not always

- **Glancing blows**
  1. Difficult to tell which model features matter; e.g., $s$ is a sunk cost, but is it an important one?
  2. Need to make banks more consequential and their failure more consequential
  3. The model is not up to the task for some experiments such as the bank bailout
6.2.1 Interpreting bad-time results

At this point we can offer only a tentative explanation for these seemingly paradoxical results, which runs in terms of the sensitivity of lending conditions to the state of the macroeconomy versus the average state of lending conditions. When times are bad banks tend to get into trouble and suddenly cut off their lending just when it is needed the most. Comparison of Tables 3 and 4 above indicates that although risky banks are in trouble more frequently in both the median situation and in the average worst-decile situation, the increase in the incidence of bank trouble going from the median to the worst-decile is much greater for safe banks (from 3.1 percent to 27 percent) than for risky banks (from 56 percent to 68 percent). Thus it appears that what makes bad times even worse is not so much the absence of lending as the cutting off of loans that had been granted before the banks go into trouble.

This line of reasoning helps to explain why careless choice of successors to failed banks seems to improve worst-case performance in the safe scenario. Weak successors are likely to be chronically in trouble, not just in the worst of times. This is indicated by Figure 7 below which shows that the median fraction of safe banks in trouble is almost 20 percent when successors are chosen randomly.

This line of reasoning is consistent with another result, namely that in the baseline
The high LTV leads to better outcomes curiosum

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<th>Risky banks</th>
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<td>Job loss rate</td>
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<td>Job loss rate</td>
<td>0.94</td>
<td>1.20</td>
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- Measurement problems?: Average v. median; non-stationarity
- Perverse policy responses? ZLB restriction?
in bad times, specifically (1) a restriction on loan-to-value ratios and (2) a restriction on dividend payments by banks.

6.1 Banks, no banks and “risky” banks

In order to see how much banks affect median performance we performed an experiment of shutting all banks down and rerunning the simulations underlying the above described calibration. To do this we simply changed the banks’ behavior in the financial market stage of each week so that they always imposed a credit limit of zero on all customers. This turns banks into mere conduits for the private holding of government debt. In this experiment a bank’s equity will always be equal to the deposit holdings of its owner, and its risk-weighted assets (loans and seized collateral) will always be zero, so the bank will never fail and will never be in trouble.

The results of this experiment can be seen in the first two columns of Table 3 below, which reports the median across simulations of the average across years of different performance indicators. As can be seen, all indicators show a deterioration in median performance, or at best no change, when banks are shut down. The changes appear to be fairly small, must less than the disastrous situation that policy makers have been trying to avert during the present crisis, but they seem substantial in light of the limited role that we have assigned to banks in this exploratory analysis, namely that of financing trade inventories, which on average are no more than about one week’s GDP.
Here are a few observations and remarks of dubious significance...

- The *private* role of recourse v. non-recourse lending is not identified, i.e., there is no moral hazard.
- Asymmetry in intertemporal decision making; e.g., entry decisions are myopic while consumption and portfolio decisions are not.
- Method for updating "output gap" estimates by CB is confusing. Which is it: $q$, $q^*$, $q - q^*$, $y^{cap}$?
- Why do bad times result in more positive output gaps?
- What of the ZLB? Any chance that it conflates with the LTV through option values?
- How do we interpret restrictions on dividend payouts? Akin to restrictions on concentrated ownership? Nationalization of banks?
Suggestions for future research

Blue sky mining

1. Bubbles are always preceded by either a technical innovation or a regulatory change. Can the AGH model produce this?

2. Focus is rightly on regulatory policy but there is lots of room to look at monetary policy. Whither policy credibility? Is transparency a good thing? How serious could monetary policy errors be in an environment like this one?

3. What would exogenous population or productivity growth do?

4. Could the process of disintermediation be modeled?
Conclusions

- A big, meaty and ambitious paper that more than demonstrates the utility of ACE for the questions at hand
- The apparatus is at hand to do a whole lot more
- The authors are among the best situated to bridge the canyon between the ACE and neo-classicalists