

Referee report on: 'Social Networks and Macroeconomic Stability.', submitted to the Economics journal.

This paper proposes a DSGE model with heterogeneous expectations. The main idea of the paper is interesting but the paper is written in a rather imprecise way. There seem to be several major inconsistencies and inaccuracies.

1. The structure of the paper is unclear. The research question is not presented in the introduction but in section 1.2, page 4: 'We shall simulate the macroeconomy using the agent-based DSGE model augmented with the Ising model, which is embedded with different network topologies. We then examine the effect of these different network topologies on the observed macroeconomic stability in terms of the output and inflation dynamics'. This part should go in the introduction.

2. On page 4, second paragraph, the authors refer to 'big names'. What exactly are 'big names'? In the same paragraph the authors claim that some network topologies are more stabilizing or destabilizing. It is not entirely clear what the authors mean by stabilizing/destabilizing. A specific definition would be advisable.

3. In section 2, at the end of page 6, the authors write that 'in this model, agents have different expectations'. This is somewhat confusing. In standard New Keynesian DSGE models, equations (1), (2) and (3) are derived under the assumption of homogeneity. Once the model has been derived, the authors introduce heterogeneous expectations by assuming that agents are either optimistic/pessimistic with regard to their inflation expectations. But under heterogeneous expectations equations (1), (2) and (3) would not hold in the first place. If the authors wish to work under the assumption of heterogeneity, they should start from the basic utility maximization problem assuming that expectations are heterogeneous and then derive equations (1), (2) and (3). It is far from clear that the equations they would arrive at would be identical to the equations (1), (2) and (3) that the authors write in their paper. This would be equivalent to derive the $e = mc^2$ formula under the assumption that the speed of light is constant, and then, once the formula has been derived, to assume that the speed of light is not constant any more.

4. In section 3.1.1, the authors give a rather lengthy presentation about the different network models (fully-connected network, circle and regular network, small world and random network and scale-free network). These are standard network models and therefore it would suffice to just name them or describe them just briefly. This is also true for the different measures used by the authors to characterize the networks (average degree, average clustering coefficient, average path length and centrality indices).

5. The description of the equations is sometimes not precise. On page 12, the authors present the equation (15) and (16). In the paragraph immediately after the equations the authors write that according to these equations two variables affect the behavior of each agent: $(m_{1,i}, m_{2,i})$ and λ . As far as I can judge, λ is not a variable but a parameter. In other places, relevant information is missing. In equation (17), for instance, the authors define the variable $w_{i,j}$ as being a function of j where $(j \in \vartheta_i)$. No formal definition of the set ϑ_i is given. It would be highly advisable to write the model in more precise way.

6. In table 3 the variances of the output gap are presented. The authors write that the variance of the output gap is the smallest under the the fully connected network. The numbers presented in the table are extremely similar. They are so close to one another that it is hard to believe

that the differences have any economic relevance. Furthermore, are these variances statistically different from one another? Something similar happens with the variances presented in table 4. The authors never comment on the relevance of the parameter λ . How does this parameter affect the results? If the macroeconomic model has three state variables, why do the authors analyze here only to the output gap and the inflation?

7. In section 4.2.2, the authors regress the (log) variance of the output gap and inflation on a series of variables relating to the network structure. It is not clear why the authors assume that the relationship between the dependent and independent variables is linear. The variables on the right hand side of equation (20) and (21) affect the variances nonlinearly in my view, as they affect the macroeconomy through the Ising model, which determines the probabilities of being an optimist/pessimist in a nonlinear fashion.

8. It would be nice if the authors would include a footnote under each table providing an explanation about the information displayed in the tables.