

Referee Report: The E-Monetary Theory

Submitted to Economics

1 Summary of the paper

The paper develops a general equilibrium model featuring two types of electronic money and a banking sector. It then conducts impulse response functions (IRFs) analysis to investigate the transmission mechanism to an interest rate shock and to a shock to the capital constraint. It finally investigates the effects on IRFs of unconventional monetary policy (UMP) in the form of large scale asset purchase (LSAP) and interest rate on reserves. It finds that keeping the interest rate on reserves too low might create deflation, while raising interest rate and money supply stabilizes inflation and output.

The topic of the paper is interesting and currently debated. I am very impressed by the features of the model. The author has included many non-standard features into a DSGE framework. The model is then able to address a variety of questions regarding the effects of unconventional monetary policy. The exposition of the paper, however, should be substantially improved. I have some specific concerns on the the existence and uniqueness of the adjustment dynamics, the calibration, IRFs analysis and the policy exercises. I list all my specific concerns and suggestions below. Note that the first 5 comments are crucial to be addressed. The remaining ones are minor comments.

2 Comments

1. Exposition of the paper.

- My understanding is that the main contribution of the paper is the modeling part. The author should stress this contribution and, at the same time, the author should provide extensive details on the algorithms used to solve the model with 5 occasionally binding constraints (OBCs): Matlab, Fortran, Dynare, etc. Appendix C should be much more detailed. Let me stress again that such a model is far from being standard in the literature.
- The paper should provide the economic intuition on why two types of electronic money are useful for the research question of the paper. What are they capturing in terms of the effects of UMP?

- The list of main results in the introduction (page 3 and 4) is too long and unclear.
 - The paragraph on related literature covers different strands of research: money supply side, money demand side, New-Keynesian models, the contribution by Brunnermeier and Sannikov (2016, NBER WP). These approaches rely on very different techniques for solving/simulating models. The author should clarify which is the main strand of literature and what the paper adds to this.
 - The Conclusion refers to the stance of monetary policy. Generally speaking people refer to the stance of monetary policy when discussing whether it is loose or tight. This paper does not deal with the stance of monetary policy.
2. I am also wondering how the different algorithms used to solve the OBCs interact. I am pretty sure that determinacy in the paper is not always guaranteed. The model might display some regions of **indeterminacy** depending on some parameter values. This is also evident from the shape of some IRFs in Figures 4 and 5. The paper should deal with this issue.
 3. **Monetary policy.** In the model section, equations (31) and (32) explain monetary policy. First of all, it is not clear to me why in the baseline model the central bank follows a rule that fixes the interest rate to a constant level. Why not using a "standard" interest-rate rule where the policy rate respond to inflation (in deviation from the target) and to the output gap? Second, additional monetary policy tools are examined throughout the paper. From a reader perspective it is better to list all of them in the model section. It would be much clearer which instrument is used in the policy exercises conducted later in the paper.
 4. **Calibration.** The explanation of the parameter choice is not precise. For some parameters the paper does not provide an explanation, such as the monitoring costs, loan amortization, the relative weight of labor, cost of changing price, the central bank parameters. I am pretty sure that the calibration of some bankers parameters, such as the monitoring cost, is not innocuous. The paper should either provide a justification or conduct robustness exercises for alternative parameterizations.
 5. **Impulse response functions.** First, the interest rate shock is calibrated quite persistent, while in the figure it seems very short-lived. Why? Second, as far as I understood, the number of quarters in Figure 3 varies from 10 (for investment and labor) to 300 (for inflation). This generates confusion in the reader. In addition, this is a business cycle model. I really do not approve the choice of plotting the response of a variable up to 75 years after the shock. Same rationale for Figures 4-6.

6. It is not clear to me why page 6 and page 12 report the same utility function (with a different index). The author could report the utility function of bankers and households once in Section 3.
7. The paper refers to forward guidance in Section 6.5.1. I think that this reference is too stretched. Strictly speaking, this paper is not modeling forward guidance.
8. The borrowing constraint (equation 19 page 15) simply states that households face an exogenous borrowing constraint. An important amplification channel is then missing. This channel would be very relevant also to investigate the effects of UMP. My guess is that results would be even amplified. I understand that the author has chosen to simplify this part of the model. However, the explanation reported in the paper does not sound convincing. The author could better justify this choice or run a robustness exercise with a proper collateral borrowing constraint in the spirit of Iacoviello (2005, AER).
9. The authors should update the references since a paper has been published.