

Reply to the referees

First of all, we are grateful to the three referees that carefully revised our paper pointing out some of its weaknesses and giving us some useful suggestions that we took into account in this new version of the paper.

From a general point of view, we tried to clarify the objectives of our investigation, along with the methodology used in order to reach these objectives. We also explained the model with more details when needed and when suggested by a referee. We performed a new set of simulations with many different seeds in order to present a more robust statistical analysis. We added some plots and tables to give a more comprehensive explanation of the achieved results. Some new references have been added to better contextualize our work. Finally we revised the English style and we formatted our text, tables and figures in order to improve the readability of the paper.

In particular, we have added table 8 and table 9 showing cross-correlations between percentage variations of private sector money endowment, GDP and price level. We added some explicit information about the average number of bankruptcies in table 10, and we have included simulation paths for both QE and FT policy strategies. Moreover, in the interpretation of simulation results we have tried to point out in a more clear and extensive way the differences between the FT and the QE case.

In the following we present a detailed list of paper modifications. We divide this section in three parts, one per referee, in order to discuss their remarks and to show the consequential adjustments of the paper.

Referee 3 (anonymous)

The referee correctly observes that the paper should be read together with other EURACE documents where the model details are better explained, in order to have a complete understanding. We completely agree with the referee. For a more complete treatment of the subject the reader should refer to the “Final Report of EURACE” (www.eurace.org) where these details can be found. We hope this will be helpful.

The referee points out that the paper presents some limitations and suggests a list of possible ways to improve it. In the following we present a summary of referee’s comments, along with our remarks and replies.

Major points

1) Great moderation

The referee points out that the model does not consider many elements involved in the economic evolution of the last decades, concluding that our interpretation of the “great moderation” could be inaccurate or misleading. Actually the referee is right, in fact, our intent was not to interpret a specific historic and economic phenomenon (the model is not fit for that) but to start from the example of “great moderation” to show that macroeconomic variability can be endogenously determined by agents’ behaviors and that it is not necessarily related to external shocks. The paper tries to bring some evidence in favor of this argument. Nevertheless, we modified the paper section concerning our digression on “great moderation” in order to be clearer and to prevent potential misunderstandings.

2) Time span and short run perspective

We shortened the time span of the simulations from 30 years to 20 years. Furthermore, we considered in some cases (table 10 for example) the effect of QE and FT in the first and in the second half of the simulation; this allows us to point out some differences between the short run effects and the long run effects. With respect to the total agents in the model, we agree with the referee that it could be useful to raise it. In particular we think it should be raised by a factor 10. However, in order to reach this goal we should run our simulation on HPC computers that run in parallel. We are currently working in order to address the technical problems involved in adapting the software platform to a multi-processor environment, therefore for the moment we tried to refine the model with a (smaller) number of agents that is however typical of current AB economic models.

3) Range of dividends pay-out

As the referee suggests we have considered also the dividends pay out value of $d = 0.5$ in the revised paper.

4) Number of simulations

We raised the number of simulations from three to ten for each set of parameters considered, following referee’s comment

Minor points

1) *Literature on interaction between financial factors and real economy*

We agree that a short review about the interplay between monetary factors and the real economy would clarify and pose in the right context the contribution of our study. For this purpose, we have included a paragraph in the introduction where some contributions both in the mainstream tradition and in the agent-based approach are discussed.

2) *The presence of the an interbank market*

It is true that the interbank market is an important channel for monetary policy transmission; however we thought that, at this stage of the model, it was not essential to include it. This because banks liquidity needs can be addressed already in the present model by the standing facility with the central bank. An interbank market could be important to signal possible stress in the credit sector, like during the Lehman Brothers failure aftermath, however this type of information is not taken into account in the present modelling stage of private agents' behavior. *Fiscal policy versus monetary policy*

The simulations performed indeed should answer already to the suggestion proposed by the referee to consider an "old" Keynesian-style fiscal policy to address insolvency problems that can not be solved by a QE monetary policy, apparently aimed to solve illiquidity problems. This because the QE simulations performed are also characterized by a loose fiscal policy, where no tax hikes can be foreseen in order to cover a budget deficit. Actually, the QE policy is mainly intended to facilitate the financing of government budget deficit in the bond market; in fact, given the impossibility to raise taxes, the government deficit can be financed only by issuing new bonds in the QE case. The QE policy is then not directly aimed to increase the money supply; this happens indeed but it is a not intentional second-order effect.

Finally, the QE policy is opposed to the fiscal tightening (FT) one, where no help by the central bank occurs in the bond market, but taxes are raised to pursue the zero government deficit target and so the issue of new bonds is lower. The lower tax burden in the QE case is probably the reason of the smaller number of bankruptcies.

As a final remark, in the present EURACE model, there is no connection between liquidity preference and lack of confidence by private agents. The money demand of firms does not directly depend on interest rates but on capital investment decisions based on past sales and technology, while the money demand of households does, through the buffet-stock consumption rule and the financial allocation decisions. However, the central bank interest rate is kept fixed during simulations and is not a policy parameter.