Report on Ph.D. Thesis of Volha Audzei


The thesis is in the fields of Macroeconomics and Applied Macro building along the main theme of information frictions. The three chapters are well written and organized. The overall evaluation is excellent. The candidate shows competence and careful analysis. What is impressive is the ability to deal with different topics at the same time, which are quite disconnected each other. This variety of interest is rare at this stage of the career and usually matures later or never. The original contribution of the first chapter is to provide an interbank model within a DSGE model to study how shifts in the expectations regarding returns on intermediary assets can generate a recession through a credit contraction. The second chapter studies the interaction between an environment of low interest rate and information acquisition in relationship with a portfolio choice of intermediaries between safe and risky assets. The third chapter studies a process of learning and in particular whether equilibria with restricted information on the side of forecasters can persist in the presence of sparse rationality, i.e. by allowing agents to consider additional information at a cost.

The chapter “Confidence Cycles and Liquidity Hoarding” proposes an innovative model of the interbank market which is then built into a DSGE model. The important feature of the banking model proposed is the heterogeneity of the banks’ expectation with respect to the return of their assets. Banks raise deposits and can invest in risky assets, moreover they can hold reserves and depending on their needs and expectations they can be lender or borrowers in the interbank market. Indeed, it is the heterogeneity between the banks’ expectations regarding the return of the risky assets that determines the position of the bank with respect to the interbank market. Moreover, based on their expectation regarding the return on the risky assets, banks determine the probability of repayment in the interbank market which then
regulates the supply and demand in the market. When lenders expect a low return on a risky asset, they assign a low probability of repayment in the interbank market. The interbank rate can raise up to the point in which there is no market at all. Once this framework is included into a DSGE model, it is possible to analyse the propagation mechanism of expectational shocks into the real economy. The DSGE model follows the line of the model of Gertler and Karadi with the novel addition of a more sophisticated interbank market. In this framework, it is also possible to analyse several intervention policies that have occurred during the financial crisis: liquidity provision, targeted liquidity intervention, lowering interest rate on reserves and relaxing collateral constraints. The paper delivers intuitive results: first, switches in expectational errors can produce a recession through a credit crunch, liquidity provision can stimulate the economy but their effect can be mitigated by investing in reserves, lowering the central bank policy rate can reduce the incentives to hoard but it can be too costly for the banking sector.

This chapter is well written and represents an important and original contribution to the literature. The key feature of heterogeneity in market expectations can generate non-trivial positions in the interbank market and generate a crisis scenario.

Here I add some more specific comments.

The paper should discuss the relevance of the assumption of heterogenous expectations in generating trading in the interbank market in contrast with the standard assumption of uncertainty in the payment system. Moreover, the focus of the simulations should be sharpened. The benchmark scenario should be that of Gertler and Karadi to study which is the size of the shock \( \xi \) needed to determine a drop in output, on impact, comparable to that of the financial crisis. Then the interbank model should be analysed with the additional shocks involved to study to what extent the shock \( \xi \) can be reduced in a way to generate the same drop in output on impact. It would be interesting to study the relevance of the several features of the interbank model in amplifying the shock, as for example the correlation across agents’ errors.

On page 10 (in the middle), notation is introduced without explaining the variable (\( \lambda, d = \lambda \)).

In equation 1.1. the probability \( p^i \) depends on the expectation of the bank i regarding the probability that a generic borrower will repay debt in interbank market. It seems more reasonable to consider the expectation of the borrowers’ own expectation. In equation 1.7, the
shock $\xi$ is multiplicative, should not be also in 1.8 and 1.9? Three lines from the bottom of page 23, mistyped word “adjustments”. Section 1.4, second line, missing reference to Table. On page 36, second line, mistyped word Rkhat.

The second chapter proposes a model of financial intermediation where intermediaries take portfolio decisions between safe and risky assets in which the return on risky assets is unknown. Intermediary can pay a cost of acquiring more information to reduce the variance of the return on the risky assets. In particular, the cost function is of two types: a linear function and an entropy-type function. The main result of the paper is that when the safe interest rate or market volatility fall, agents learn less about the risky assets while they are buying more of it. This captures risk taking which, in some narrative of the financial crisis, has been associated with the Great Moderation.

The model proposed is very simple and intuitive. Intermediaries maximize a mean-variance utility function both by choosing the allocation of their portfolio and the costs of information acquisition. The optimal choice of the risky assets is a positive function of the excess return and negative of the variance. By acquiring more information, and therefore reducing the variance, intermediaries hold more risky assets. When the safe rate falls then the risk premium increases making more attractive the investment in the risky assets. Moreover, intermediaries reduce the budget allocated to acquire more information. This framework is then casted in a general equilibrium analysis and then simulated to draw implications.

The analysis is competent, the model proposed is simple and the mechanism intuitive. Here are some general and minor comments. First, it is not clear why in the general equilibrium analysis the utility of intermediaries is mean variance and not related to the pricing kernel of the consumer who holds intermediary. Moreover, agents learn about the variance, but it seems more reasonable that they should want to get information on the position of the return on capital in order to make precise inference. Table 2.1: it is not clear whether it should be read by columns or rows. Page 65, typo “non-forgetting”. Page 69, last paragraph: “it decreases the expected risk premium”. It should be “increases” rather than “decreases”. Figure 2.3 is not clear. Budget constraint 2.10: where are previous-period deposits? The risky return in 2.15 should be derived from the problem of the manufacturer rather than defined. I suspect it should also include the depreciation rate. Why do capital market clear when investment equals to the capital stock of banks? Shouldn’t be the case that the capital stock is held by intermediary? I found Section 2.7.3 disconnected from the analysis.
The last chapter of the dissertation focuses on departures from rational expectations and learning. It is known that adaptive learning can deliver equilibria in which agents make only a partial use of the relevant information. The original contribution of the paper is to ask what will happen if agents are given the possibility to add other relevant variables in their forecasting model after paying a cost. The paper adopts the concept of sparse rationality. In this case, paying attention to all variables of interest is costly. Therefore, the agents must choose to which variables paying more attention. It can be possible that they decide to stick to the original misspecified model. The paper first presents a simple two-state model and then a simple business-cycle model. In the latter model, it is found that agents persist with the misspecified model if the feedback of expectations is stronger or inflation is more persistent. The analysis is conducted in a competent and careful way. The only drawback is that the paper is too dry although this is conceivable given the technical features involved in the analysis. More work should be done to keep it accessible to any reader.

To conclude, the thesis of Volha Audzei is quite impressive and should be admitted to the final defence. She shows ability to deal in a careful way with important topics in the Macro literature using sophisticated techniques. The degree of originality is high and the contribution to the academic debate is outstanding.

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