PhD Thesis Abstract:

Rescuing private DSGE

Valerio Scalone

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2008-2009 financial crisis marked the end of the Great Moderation. In particular, the Zero Lower bound, financial frictions, housing market boom and bust phases showed the inadequacy of the pre-crisis state-of-the-art DSGE models in several dimension: the role of non-linearities, the effects that strong shocks have on the growth trend of the economy, just to mention a few.

The goal of these thesis is to fix some open issues related to the use of empirical DSGE models after the end of the Great Moderation.

In the first chapter, a simple set of techniques going under the name of Approximate Bayesian Computation (ABC) is proposed to perform non-linear DSGE estimation. In fact, non-linear model estimation is generally perceived as impractical and computationally burdensome. This perception limited the diffusion on non-linear models estimation.

ABC is a set of Bayesian techniques based on moments matching: moments are obtained simulating the model conditional on draws from the prior distribution . An accept-reject criterion is applied on the simulations and an approximate posterior distribution is obtained by the accepted draws.

A series of techniques are presented (ABC-regression, ABC-MCMC, ABC-SMC). To assess their small sample performance, Montecarlo experiments are run on AR(1) processes and on a RBC model showing that ABC estimators outperform the Limited Information

Method (Kim, 2002), a GMM-style estimator.

In the remainder, the estimation of a new-Keynesian model with a zero lower bound on the interest rate is performed. Non-gaussian moments are exploited in the estimation procedure.

In the second chapter of the thesis, I try to explore the relations between growth trend of the economies and business cycles fluctuations, focusing on the role played by housing medium term fluctuations.

In many economies' recent experiences, housing market volatile fluctuations have been blamed as responsible for driving or at least influencing the trend at which economies were growing (US, Japan and Spain to mention a few).

The second chapter inquires on the possibility that houses, playing the double role of durable consumption good and collateral, can affect the growth trend at which an economy grows.

This is done through the study of a medium scale DSGE model with heterogeneous agents and endogenous growth where housing prices fluctuations influence the households' investment in technology, with a final effect on the growth trend.

It turns out that against the general wisdom, an exogenous increase in the appetite for housing generates a temporary decline in the growth trend. Conversely, the temporary relaxation of the borrowing constraints for debtors is able to generate the positive co-movement between housing prices and growth trend observed in the last twenty years across the developed economies. The more indebted the economy, the larger the degree of exposure to this type of fluctuations will be.