Term Project

Steve Ambler
Université Mohammed VI Polytechnique

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I believe there are no lectures or labs after December 4. Exam week begins on December 14. I can give you until December 27 to hand in written answers to the project, which means I should be able to get final grades in by Monday January 1. I will also give you feedback by December 24 on how you stand with respect to the other components of the final grade (midterm exam, final exam), as long as I get scanned copies of the final exam to grade by December 23.

I encourage you to work together on this. I think it helps the learning process. However, I would ask you to write your written reports independently.

This should be a simple application of *Dynare*. In fact it will be simpler than the basic model simulated in the *Dynare* tutorial since the basic model is already linearized. On the other hand, the expectations-formation equations are nonlinear.

1. Take the behavioural New Keynesian model in Calvert-Jump and Levine (2019), consisting of the matrix equation (7) (a standard New Keynesian model) and equations (9) through (12). The paper is available on CANVAS or here :

   https://www.steveambler.uqam.ca/511/readings/calvert-jump.levine.2019.pdf

2. Simulate the model with rational expectations. This model is just the matrix equation (7) without the expectations-updating equations. Discuss the results you get. How well do they compare with the stylized facts in Table 1 ? Vary the parameter which says how the nominal interest rate responds to changes in inflation, θ_π. What happens when θ_π drops below one ? Explain intuitively, in your own words, what happens in this case.

3. Use the calibrated parameters on page 65 of the paper to simulate the model. Make sure you can reproduce the results in Table 3 of the paper. Show

your *Dynare* code and output. For calculating skewness and kurtosis, see https://archives.dynare.org/manual/Stochastic-solution-and-simulation.html

4. Discuss the stability properties of the model (stable versus unstable roots). Explain how these differ from a model with rational expectations. Hint : are the expectations updating equations forward or backward looking ?
5. Analyze how the predictions of the model change in response to changes in the μ parameter which stipulates how expectations are updated in response to lagged forecast errors. Discuss the results you find.
6. Add back the monetary policy shock, u_{3t}. Calibrate it with an autoregressive parameter of 0.9 and a standard deviation of 0.01. How do the predictions of the model change ? Speculate on the possible mechanisms for these changes.

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