

**IGIDR Workshop on DSGE Modeling for Emerging Economies
August 6th and 7th, 2018**

Required software: Matlab, DYNARE, STATA

Tentative outline:

1. **Model:** We will set up a benchmark neoclassical growth model with fiscal authority. We will analyze the model by deriving its optimality conditions. We will then characterize the steady state equilibrium of the model and discuss how it can be used to calibrate model parameters.
2. **Solving the model:** We will then show how to solve this benchmark model using DYNARE. In particular, we will discuss an approximation method based on the first- or second-order Taylor series expansion. We will implement the method by approximating all model equations around the steady state and solving the resulting system of difference equations. Here I will give an extensive introduction to DYNARE software which can be readily used to solve a wide range of DSGE models.
3. **Analyzing the results:** We will analyze the solution to the model by discussing the decision rules and laws of motion produced by DYNARE. We will pay special attention to conditions for equilibrium stability and sun-spots (the Blanchard-Kanhan condition based on eigenvalues). We will then present the impulse responses implied by the model in response to productivity and fiscal shocks. To obtain the variances, covariances and persistence coefficients implied by the model we will rely on both the analytical expressions and on model simulations. We will also assess the contribution of each shock by means of variance decompositions.
4. **Assessing the fit of the model:** To assess the fit of the model we will contrast the second moments in the model and in the data, as well as compare the impulse responses obtained from the model with those from reduced form or structural Vector Autoregressions (VARs).
5. **Adding frictions to the model:** We will then extend the benchmark model to allow for additional features that have proved important in emerging market economies: adjustment costs to investment (Christiano, Eichenbaum and Evans, JPE 2005); financing constraints, world interest rate and risk-premium shocks (Neumeyer and Perry, JME 2005); trend shocks (Aguiar and Gopinath, JPE 2007); volatility shocks (Fernández-Villaverde, et al, AER 2011).

Reading list:

1. Aguiar, M., and G. Gopinath, 2007. "Emerging Market Business Cycles: The Cycle is the Trend," *Journal of Political Economy* 115: 69-102.
2. Roberto Chang and Andrés Fernández, 2013. "On The Sources Of Aggregate Fluctuations In Emerging Economies," *International Economic Review*, vol. 54: pages 1265-1293.
3. Fernández-Villaverde, Jesús, Pablo Guerrón-Quintana, Juan F. Rubio-Ramírez, and Martin Uribe, 2011. "Risk Matters: The Real Effects of Volatility Shocks." *American Economic Review*, 101 (6): 2530-61. DOI: 10.1257/aer.101.6.2530
4. Mendoza, E., 1991. "Real Business Cycles in a Small Open Economy," *The American Economic Review*, Vol. 81: 797-818.
5. Neumeyer, Pablo A. & Perri, Fabrizio, 2005. "Business cycles in emerging economies: the role of interest rates," *Journal of Monetary Economics*, Elsevier, vol. 52(2): pages 345-380, March.
6. Uribe, M. and V. Yue, 2006. "Country Spreads and Emerging Countries: Who Drives Whom?", *Journal of International Economics* 69: 6-36.
7. Schmitt-Grohe, S. and M. Uribe, 2003. "Closing Small Open Economy Models", *Journal International Economics* 61: 163-185.