

Lecture 1: Introduction to Dynamic Stochastic General Equilibrium Modeling (DSGE)

Lei Pan

School of Accounting, Economics and Finance
Curtin University

Topics Covered

- Background
- Solution logic of DSGE models
- Installation of Dynare
- Getting to know Dynare
- Real business cycle (RBC) and New Keynesian (NK) models

Chapter 1: Introduction on DSGE Model

- Course Introduction
- Development of DSGE models
- Typical constructions of DSGE Models
- Macroeconomic database: Macro Model Database (MMB)

Chapter 2: Solution Logic of DSGE Models

- First-order solution of DSGE models
 - First-order solution logic
 - Log-linearization
 - State space representation of linear models
 - BK method
 - Schur method
 - Uhlig (1999) method
- Second-order solution of DSGE: Dynare solution logic
 - Taylor approximation based on perturbation: Schmitt-Grohé and Uribe (2004).
 - Curse of dimensionality and deterministic equivalence.
 - How to compute steady-state values?
 - How to calibrate parameters for exogenous technological shocks: persistence and volatility

- Install Dynare
- Configure Dynare
- Running and editing Dynare Files
- Managing multiple versions of Dynare
- Getting help

Chapter 4: Advanced Dynare

- A simple example
- Classification and writing standards of dynare variables
- Basic syntax of Dynare
- Methods for inputting model equilibrium conditions: level, log-level
- Storage, calling, and listing of variables
- Compilation of Dynare files
- Connection between Dynare solution representation and state-space representation
- Analysis and calling of solution results
- Stochastic simulation with `stoch_simul`
- Impulse response function (IRF)
- Introduction to parameter estimation

- RBC Model
 - CIA (Cash-in-Advance)
 - MIU (Money-in-Utility)
- NK Model
 - Sticky price setting
 - Price dispersion
 - Flexible price model
 - Analysis of two types of inefficiencies (distortions)
 - Dynare code and IRF analysis
 - Comparison of price and quantity Rules (for monetary policy)
- Medium-scale DSGE Models