

Why Dynare

- Structural models that rest on theory.
- Microeconomic foundations \Rightarrow *nonlinear models*
- Intertemporal optimization \Rightarrow *expectations matter*. Rational expectations.
- Stochastic shocks push the economic system away from equilibrium. Endogenous dynamics bring it back towards equilibrium.
- Mathematical difficulty: solving nonlinear stochastic forward-looking model under rational expectations.

- A toolbox with cutting edge algorithms to handle DSGE models
- A modeling language to represent models and computing tasks
- A clear separation between
 - ▶ A *particular* model declared by the user
 - ▶ Computing functions that handle an entire family of DSGE models

Dynare does ...

- ① computes the solution of deterministic models (arbitrary accuracy),
- ② computes first, second and higher order approximation to the solution of stochastic models,
- ③ estimates (maximum likelihood, Bayesian approach, methods of moments) parameters of DSGE models, for linear and nonlinear models.
- ④ check for identification of estimated parameters
- ⑤ computes optimal policy,
- ⑥ performs global sensitivity analysis of a model,
- ⑦ estimates BVAR and Markov-Switching Bayesian VAR models.
- ⑧ Macro language and reporting facility