Module Overview

- The objective of this module is to provide an **introduction** to dynamic macroeconomic models
- We focus on how to write, solve, simulate, evaluate and study examples of DSGE models
- Most of these models require some numerical techniques in order to yield useful solutions
- We will mainly use Matlab and DYNARE (a pre-processor for Matlab) for that purpose
- In addition, it may be useful to get some exposure to JMulti (for VARs)

Module Overview

- This module is challenging and requires hard work if you want to deeply learn these topics
- Also requires spending time on the computer (some programming is un-avoidable)
- You will have a mastery of these methods and can do independent research or be employed in the financial industry

Prescott (1986)

- The neoclassical growth model with stochastic technical change displays business cycle phenomena (relative volatility and comovement among macro variables) comparable to that observed in the post- WWII US data (Kydland and Prescott (1982)).
- The elements of the model, namely the inter- and intra-temporal substitution of consumption and leisure in the face of shifting production possibilities, with not much movement in marginal product of labour (wages), can explain business cycles well
- Since the theory predicts what we observe, there is no puzzle as to 'why' industrial market economies exhibit recurrent fluctuations
- Where the match between theory and data is not perfect (labour elasticity of output), data ought to be measured in line with the theory
- Thus, theory is ahead of business cycle measurement!

Kydland and Prescott (1982): The RBC Paradigm

The contributions of the Real Business Cycles (RBC) paradigm

- Methodological contribution
  - Household and firms solve well defined optimization problems (objective functions and constraints) instead of behavioural equations
  - Rational expectations instead of adaptive or ad hoc expectations formation
  - Emphasis on quantitative performance of the model (calibration, simulation, and evaluation)
- Conceptual contribution
  - Business cycles are efficient as they are optimal responses to exogenous shocks
  - Technology shocks are the primary source of aggregate fluctuations
  - Monetary factors are unimportant.
  - Normative implication: Friedman rule ($i_t = 0$) is optimal

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