Macroeconomic Dynamics with Heterogeneous Agents

Semester I, 2009

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Course Discretion

This course discusses the recent development of dynamic macroeconomic theory that explicitly considers heterogeneity of agents. While the field of macroeconomics with heterogeneous agents covers a wide range of issues, in this course we focus on the baseline models of growth and business cycles with heterogeneous households. Sources in heterogeneity we treat are: wealth holding, income earning ability, preferences, idiosyncratic shocks, and information structures. This is a course for advanced graduate students specializing in macroeconomics. The basic knowledge of macroeconomic theory taught in the Core Macroeconomic Course is required.

Course Outline

1. Neoclassical Growth Models with Heterogeneous Agents (I) : Complete Markets
   1.1 Wealth distribution and aggregate dynamics
   1.2 Heterogenous preferences
   1.3 Extensions

2 Neoclassical Growth Models with Heterogeneous Agents (II) : Incomplete Markets
   2.1 Borrowing constraints and idiosyncratic disturbances
   2.2 Growth and Business Cycles with Incomplete Markets
   2.3 Policy Implications

3 Overlapping Generations Models with Intragenerational Heterogeneity
   3.1 Intergenerational and intragenerational heterogeneity
   3.2 Financial market imperfection

4 Heterogeneous Expectations
   4.1 Rational expectations and heterogenous learning
   4.2 Heterogeneous Information
Reading List

The following list of papers is not exhaustive one. It includes seminal contributions to each topic, useful survey papers as well as recent contributions that would be useful for further development. The seminal papers are marked with (*) and the useful overviews are indicated by (#). You can find extensive literature lists in the articles with (#).

- General reference:


1: Neoclassical Growth Models with Heterogenous Agents (I) : Complete Markets

1.1. Wealth distribution and aggregate dynamics

(#) Bertola et al. (2006), Chapter 3


Foellmi, R. (2008), "Inequality and Aggregate Savings in the Neoclassical Growth Model". unpublished manuscript, University of Zurich.


(#) García-Peñalosa, C. (2008), "Inequality and Growth: Goal Conflict of Necessary Perrequisite?", unpublished manuscript.


1.2. Heterogenous preferences and income taxation

Bertola et al. (2006), Chapter 4.


Hendricks, L. (2007), "How Important is Discount Rate Heterogeneity for Wealth Inequality?", Journal of Economics Dynamics and Control 31, 3042-3068.


1.3. Extensions

Bertola et al. (2006), Chapter 12.


2: Neoclassical Growth Models with Heterogenous Agents (II): Incomplete Markets

2.1. Borrowing constraints and uninsurable shocks

(#) Bertola et al. (2006), Chapters 8 and 9.


2.2. Growth and Business Cycles with Incomplete Markets


2.3. Policy Implications


3. Overlapping Generations Models with Intragenerational Heterogeneity

3.1. Intergenerational vs. intragenerational heterogeneity

(#) Bertola et al. (2006), Chapter 5.

Benhabib, J. and Zhu, S. (2008), "Age, Luck, and Inheritance", unpublished, NYU.


3.2. Financial market imperfection

(#) Bertola et al. (2006), Chapter 7.


4. Heterogeneous Expectations

4.1. Rational Expectations and Heterogeneous Learning


(#) Evans, G. and Honkapohja, S.(2008), Learning in Macroeconomics, unpublished manuscript.


4.2 Dispersed Information


Porapakkarm, P. and Young, E. (2008), "Information Heterogeneity in the Macroeconomy", unpublished
In economic theory and econometrics, the term heterogeneity refers to differences across the units being studied. For example, a macroeconomic model in which consumers are assumed to differ from one another is said to have heterogeneous agents. In econometrics, statistical inferences may be erroneous if, in addition to the observed variables under study, there exist other relevant variables that are unobserved, but correlated with the observed variables; dependent and independent variables. Heterogeneous agents, computational economics, estimation, lumpy investment. JEL classification. C63, E22, E32.

This paper has developed a general-purpose computational method for solving and estimating heterogeneous agent models. I have provided codes and a user guide to implement the method using Dynare with the hope that it will bring heterogeneous agent models into the fold of standard quantitative macroeconomic analysis. A particularly promising avenue for future research is incorporating micro data into the estimation of DSGE models. Journal of Economic Dynamics and Control, 91, 349–368. [1126].