Advanced Macroeconomics - Part 2

Preliminary syllabus – Fall 2026

RoME and RED

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1 Introduction, Organization, and course objectives

This section of the core macro sequence is devoted to studying economic modeling frameworks in which agents are heterogeneous and markets are subject to frictions. These models are helpful for analyzing a wide range of questions related to business cycles, the sources of heterogeneity across households or across firms, the transmission of shocks in the economy, the effects and design of fiscal and monetary policies, etc.

We will start with a general introduction to heterogeneity, welfare, and motives for policy (Theme 1), before giving a brief introduction to numerical methods for heterogeneous-agent models with aggregate shocks (Theme 2). We will do a general overview of models with firm heterogeneity and frictions (Theme 3), which serve as building blocks in recent applied and quantitative macro research. The core of the class will then be to focus on HANK models – or Heterogeneous Agents New Keynesian Model – and the implications for Monetary and Fiscal Policies

Objectives: The aim of this course is to learn: 1) an important class of macroeconomic models, and 2) how to solve numerically for the equilibrium of these economies, a necessary step to use these models for quantitative research, 3) how to get familiar with frontier research in macroeconomics, including how to read and engage critically with economic articles.

Textbooks and readings: The class will be relatively self-contained: the slides are the main references, and the required readings will be listed below with ($\star$). ***Recursive Macroeconomic Theory***, by Lars Ljungqvist and Tom Sargent (LS), MIT Press, latest edition, is a very useful textbook. You will also use Recursive Methods in Economic Dynamics, by Stokey, Lucas, and Prescott (SLP), Harvard University Press, 1989. The lecture notes refer to both extensively. A brand new macro textbook by Marina Azzimonti, Per Krusell, Alisdair McKay, and Toshi Mukoyama (AKMM) is available online: https://phdmacrobook.org, and is almost entirely complete. We might use chapters 10, 11, 21, and 22 (and 6, and 9 for review). You should already be familiar with the material in chapters 1-9.

Review and survey articles: A master in economics (or PhD coursework) cannot give justice to the diversity of topics in economic research. Many renowned economists have writen survey articles, published for example in the JEL (Journal of Economic Literature), JEP (Journal of Economic Perspectives), Annual Reviews of Economics, NBER Macroeconomics Annuals, or other outlets. It is strongly encouraged to read some of the ones proposed below (or others) to have an overview of the literature in topics that interest you. It is particularly fruitful before the Master Thesis or during the PhD.

2 Grading and Homework

1. In-class participation 10 %
2. In-class quizzes (TBC): 10 %
3. In-class presentation of a research paper (TBC): 10 %
4. Problem sets and coding exercises: 15 %
5. Research proposal/project: 15%
6. Final exam: 40%

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(1) Class participation involves preparing assigned readings ahead of class and actively participating during class, especially during the assignment review sessions on Fridays. (2) In-class quizzes will be very short (a few questions) and based on the content of the lectures and required readings.

(3) In-class presentation will require every student to prepare a 5-slide presentation on the assigned research papers (listed with [†] below), and one student will be chosen at random to present the paper. The grade will be based on the quality of the slides (and is expected to be 10% for everyone).

(4) The problem sets assume familiarity with a statistical software or programming language of your choice (Matlab, Julia, Python, etc.). For the problem sets and coding exercises, students may work individually or in pairs. In the latter case, please indicate your coauthor. For this, it is encouraged to *interact* with LLMs (e.g. Claude Code, Codex, Copilot, Gemini), however it is strongly *discouraged* to completely delegate the tasks to AI tools: you should be in driver's seat. Each student must submit their own copy by email. Please use "RoME Advanced Macro: Pset # submission" as the subject of your email (replace # with the problem set number). Late submissions will incur a penalty.

(5) For the research project, students are expected to develop an original research idea that could be used for the master's thesis or future research. The topic can be only loosely related to the content of the class. While we do not necessarily expect a complete academic paper, students' projects must contain (i) a well-defined and well-motivated question, either (ii) an empirical strategy and a description of the dataset (used or hypothetical) required to answer the question, or (iii) a sketch of a model and theoretical derivation, or (iv) a quantitative model to be simulated numerically, and (v) (potentially) preliminary results.

(6) The exam will be individual and closed-book and will be on the last week of Fall semester.

3 Course outline

Required reading: (⋆)
Potential in-class presentation: [†]
Homework: ***(HW)***

3.1 Theme 1 (Week 1)
Introduction: Heterogeneity, Market failures, and frictions

- Welfare theorems (see Mas-Colell, Whinston and Green (1995)), Negishi theorem (Negishi (1960)), Market failures and efficiency, wedges and shocks: Chari, Kehoe and McGrattan (2007)
- Scope for policy intervention: Fiscal, Monetary, Industrial, Development, Climate, Trade, etc. policies.
- Welfare and Decomposition: Efficiency, Redistribution, Insurance: Bhandari, Evans, Golosov and Sargent (2026), Dávila and Schaab (2025*a*). One of the two: [†]
- (If time permits) Heterogeneity and Aggregation: Gorman (1953)

Applications: (If time permits) Industrial policy: ***Review*** Juhász, Lane and Rodrik (2024), Bartelme, Costinot, Donaldson and Rodriguez-Clare (2025). Climate policy: Nordhaus DICE Barrage and Nordhaus (2024), Golosov, Hassler, Krusell and Tsyvinski (2014), Krusell and Smith (2022), Bourany (2025).

3.2 Theme 2 (Weeks 1 and 2)
Models with agent heterogeneity and methodology for aggregate dynamics

- HA models prerequisites: Aiyagari (1994), Huggett (1993), Carrol (2006), Achdou, Han, Lasry, Lions and Moll (2022)
- Transition in Heterogeneous agents (HA) models
- First-order perturbation: Reiter (2009), Algan, Allais and Den Hann (2010), Ahn, Kaplan, Moll, Winberry and Wolf (2017), and Sequence-Space Jacobian (SSJ): Auclert, Bardóczy, Rognlie and Straub (2021), and Dynare: Adjemian, Juillard, Karamé, Mutschler, Pfeifer, Ratto, Rion and Villemot (2026)
- MIT shock and certainty equivalence Boppart, Krusell and Mitman (2018)
- (If time permits) Second-order perturbation: Bhandari, Bourany, Evans and Golosov (2023), and Global methods for aggregate risk: Krusell and Smith (1998), Bourany (2026)

Application Dynamics of inequality: Hubmer, Krusell and Smith (2021), Heathcote, Perri and Violante (2010), Gabaix, Lasry, Lions and Moll (2016), ***Review:*** Benhabib and Bisin (2018)

(HW 1) Transition path and dynamics of the distribution of income and wealth in HA models

Note: Computational methods for HA models (without or with aggregate risk) will be covered more extensively in Sara Casella's class.

3.3 Theme 3 (Weeks 2 and 3)
Firm frictions and heterogeneity:
Misallocation, Networks, Financial Frictions, and Market Power

- Misallocation: (⋆) Hsieh and Klenow (2009), Restuccia and Rogerson (2008),Hsieh and Klenow (2014), Bergquist, Lashkari and Verhoogen (2026)
- Aggregate trends: Rise in markups De Loecker, Eeckhout and Unger (2020), Decline in the labor share Karabarbounis and Neiman (2014), Kehrig and Vincent (2021), Autor, Dorn, Katz, Patterson and Van Reenen (2020), rise in concentration Kwon, Ma and Zimmermann (2024), and rise in productivity dispersion: Gouin-Bonenfant (2022), Desazars (2025)
- Production networks: Acemoglu, Akcigit and Kerr (2016), ***Reviews:*** Carvalho (2014), Carvalho and Tahbaz-Salehi (2019),
  Hulten's theorem, and networks with misallocation: (⋆) Baqaee and Farhi (2020)
- Financial frictions and macrofinance "classics": Kiyotaki and Moore (1997), Bernanke, Gertler and Gilchrist (1999), and many others
- Models and empirics on firm dynamics with financial frictions: Midrigan and Xu (2014), Crouzet and Mehrotra (2020), Ottonello and Winberry (2020), Khan and Thomas (2013), Jeenas (2026)
- Market power and endogenous markups: Atkeson and Burstein (2008), [†] Edmond, Midrigan and Xu (2023)

Reviews: Hopenhayn (2014), AKMM, Chap 22, Baqaee and Rubbo (2023), Syverson (2019), De Ridder, Grassi and Morzenti (2026) (many reviews on these themes!)

(HW 2) Model with firm size distribution, heterogeneity in productivity and markups, and calibration on firm-level data (Compustat).

Note: Models and empirics for firms dynamics will be covered more extensively in Bernardo Ribeiro's class.

3.4 Theme 4 (Weeks 4, 5 and 6)
Household heterogeneity with nominal rigidities and policy implications of HANK models

- Baseline HANK model: (⋆) Auclert (2025)
- Aggregate Demand and aggregation: (⋆) Werning (2015), Farhi and Werning (2016),
- Quantitative HANK models: McKay, Nakamura and Steinsson (2016), Kaplan, Moll and Violante (2018), [†] Auclert, Rognlie and Straub (2024)
- Applications: Guerrieri and Lorenzoni (2017), Challe, Matheron, Ragot and Rubio-Ramirez (2017), McKay and Reis (2016), Auclert (2019), Bilbiie (2025), Guerrieri, Lorenzoni, Straub and Werning (2022), Auclert, Bardóczy and Rognlie (2021), Pfäuti and Seyrich (2022), Angeletos, Lian and Wolf (2024), Schaab and Tan (2025),
- Optimal policies: Bhandari, Evans, Golosov and Sargent (2021), Acharya, Challe and Dogra (2023), La'O and Morrison (2024), Le Grand, Martin-Baillon and Ragot (2024), Le Grand, Ragot and Bourany (2025), Dávila and Schaab (2023), Angeletos and La'O (2020), One of them (TBD): [†]
- Modern empirical work: ***Review***: Ramey (2016) and Nakamura and Steinsson (2018*b*)
  Monetary and fiscal policy: Nakamura and Steinsson (2018*a*), Nakamura and Steinsson (2014), Känzig (2023), Bilbiie and Känzig (2024)

Reviews: Kaplan and Violante (2018), Auclert, Rognlie and Straub (2025), Kaplan (2025)

(HW 3) Transmission of shocks in HANK models and design of fiscal and monetary policy.

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