

ECON 747: The Macroeconomics of Imperfect Capital Markets

University of Maryland

Course syllabus – Spring 2024

Practical information

- Instructor: Thomas Drechsel (drechsel@umd.edu)
- Time & Location: Tuesday 2:30pm - 5:00pm
- Location: Tydings Hall, 1108
- Office hours: by appointment
- For UMD graduate course policies, see <https://gradschool.umd.edu/course-related-policies>

Scope of the course

ECON 747 is designed as a field course for students who have completed introductory graduate course work in macroeconomics. The course is built around three main ideas. First, its objective is to understand the role of financial markets for fluctuations in the macroeconomy. More specifically, starting from a complete markets benchmark, we study canonical types of credit market frictions that give rise to macroeconomic effects. Second, the course aims to enhance the students' toolkit to carry out state-of-the-art research in macroeconomics in general. It provides plenty of practical exercise to take models (usually DSGE models with financial frictions) to the computer. Third, alongside the methodological content, we revisit empirical facts on the regularities of financial variables, the 2008-09 global financial crisis and the Covid-19 recession.

References

References to papers are given in the detailed course outline below. Mandatory and recommended readings will be indicated in class. A textbook reference for some topics is *Recursive Macroeconomic Theory* by Ljungqvist and Sargent (chapter numbers refer to the 2nd edition).

Evaluation

- Evaluation will be based on:
 - 4 homework assignments (15% of final grade each)
 - 1 final project (40% of final grade)
- The assignments will be carried out in groups, mostly using *Matlab/Dynare*
- The final project is individual and will consist of “kick-starting” a project in the research areas covered in the course; more details are provided in the separate *Instructions for Final Project* document and will be discussed in class

Detailed course outline and readings

1. Introduction and methodological basics

1.1 Empirical motivation and macro-finance facts [[Lecture 1](#)]

- Behavior of financial variables over the business cycle
- The experience with two crises: 2008/09 and 2020
- Macro-finance trends
- Are financial variables useful to predict recessions?
- Challenges with understanding financial variables
- (Why) should macroeconomists study financial markets?

References: [Quadrini \(2011\)](#), [Gertler and Gilchrist \(2018\)](#), [Gilchrist and Zakrajšek \(2012\)](#), [Covas and Den Haan \(2011\)](#), [Mian and Sufi \(2010\)](#), [Mian and Sufi \(2015\)](#), [Mian and Sufi \(2018\)](#), [Albanesi, De Giorgi, and Nosal \(2017\)](#), [Gorton and Metrick \(2012\)](#), [Adrian, Colla, and Shin \(2013\)](#), [Jordà, Schularick, and Taylor \(2017\)](#), [Farhi and Gourio \(2018\)](#), [Falato, Kadyrzhanova, and Sim \(2013\)](#), [Faust, Gilchrist, Wright, and Zakrajšek \(2013\)](#), [Stock and Watson \(2003\)](#), [Adrian, Boyarchenko, and Giannone \(2019\)](#), [Bianchi, Ludvigson, and Ma \(2022\)](#)

1.2 Business cycle basics and Dynare [[Lectures 2 & 3](#), [Assignment 1](#)]

- DSGE models as a core framework
- Historical perspective on DSGEs
- RBC models and wedges
- Understanding and solving DSGE models
- Business cycle comovements and different types of shocks
- DSGEs as data-generating processes
- Solving the basic neoclassical RBC model in Dynare
- Dos and Donts of using Dynare

References: [Kehoe, Midrigan, and Pastorino \(2018\)](#), [Prescott \(2016\)](#), [Chari, Kehoe, and McGrattan \(2007\)](#), [Stock and Watson \(1999\)](#), [Uribe and Schmitt-Grohé \(2017, Ch.1\)](#), *Dynare Manual* by [Adjemian et al. \(2022\)](#), [Judd \(1998\)](#), Notes by Wouter Den Haan, available [here](#)

2. Building models with financial frictions

2.1 From complete to incomplete markets [[Lecture 4](#), [Assignment 2](#)]

- Why start with a complete markets model?
- A benchmark model with complete markets
- Arrow securities and Arrow-Debreu securities
- Asset pricing with complete and incomplete markets
- The Lucas tree model
- The term structure of interest rates
- The equity premium puzzle and suggested explanations
- The Q theory of investment and its empirical performance

Textbook reference: Chapters 8, 12, 13 of Ljungqvist-Sargent

References: [Lucas \(1978\)](#), [Mehra and Prescott \(1985\)](#), [Campbell and Cochrane \(1999\)](#), [Mehra \(2007\)](#), [Barro \(2006\)](#), [Bansal and Yaron \(2004\)](#), [Hayashi \(1982\)](#), [Fazzari, Hubbard, and Petersen](#)

(1988), [Strebulaev and Whited \(2011\)](#), [Crouzet and Eberly \(2020\)](#)

2.2 Incomplete markets and heterogeneous agents [[Lecture 5, Assignment 3](#)]

- Departures from the benchmark: asset market incompleteness and heterogeneity
- Precautionary savings in partial equilibrium
- The permanent income hypothesis
- A benchmark model with incomplete markets
- Pure credit economy (Hugget 1993)
- Adding capital (Aiyagari 1994)
- Adding aggregate risk (Krusell-Smith 1997)
- The latest generation of heterogeneous agent models: HANK

Textbook reference: Chapters 16, 17 of Ljungqvist-Sargent

References: [Quadrini \(2011\)](#), [Zeldes \(1989b\)](#), [Zeldes \(1989a\)](#), [Hall \(1978\)](#), [Shea \(1995\)](#), [Wilcox \(1989\)](#) [Huggett \(1993\)](#), [Aiyagari \(1994\)](#), [Krusell and Smith \(1998\)](#), [Kaplan, Moll, and Violante \(2018\)](#), [Auclert, Rognlie, and Straub \(2020\)](#), [Bayer, Born, and Luetticke \(2020\)](#), [Lee \(2020\)](#)

3. Models with constraints on risk-free debt

3.1 The Kiyotaki-Moore model [[Lecture 6, Assignment 3](#)]

- Overview and baseline model
- Understanding the financial accelerator

References: [Kiyotaki and Moore \(1997\)](#), [Kiyotaki \(1998\)](#)

3.2 Microfoundations [[Lecture 7](#)]

- Endogenous market incompleteness due to agency frictions
- Literature overview on incomplete contracts
- Understanding limited enforcement
- Hart and Moore's (1994) theory of debt: the inalienability of human capital

References: [Hart \(2017\)](#), [Aghion and Holden \(2011\)](#), [Grossman and Hart \(1986\)](#), [Hart and Moore \(1990\)](#), [Hart and Moore \(1994\)](#), [Hart and Moore \(1998\)](#), [Aghion and Bolton \(1992\)](#), [Bulow and Rogoff \(1989\)](#), [Kaplan and Strömberg \(2003\)](#)

3.3 Issues and limitations of Kiyotaki-Moore [[Lecture 8, Assignment 3](#)]

- Limited amplification
- Debt constraint vs. non-state contingency of debt
- Studying risk

References: [Kocherlakota \(2000\)](#), [Cordoba and Ripoll \(2004\)](#), [Cao and Nie \(2017\)](#), [Shi \(2015\)](#)

3.4 Applications [[Lecture 8, Assignment 3, student presentations](#)]

- Household debt and firm debt
- Financial shocks
- Working capital constraints

- Firm dynamics and the firm life cycle
- International macro: sudden stops and deleveraging
- Normative implications
- Occasionally binding constraints
- Multi-period debt

References: [Iacoviello \(2005\)](#), [Jermann and Quadrini \(2012\)](#), [Christiano, Eichenbaum, and Trabandt \(2015\)](#), [Buera and Moll \(2015\)](#), [Greenwald \(2017\)](#), [Justiniano, Primiceri, and Tambalotti \(2019\)](#), [Dinlersoz, Kalemli-Ozcan, Hyatt, and Penciakova \(2018\)](#), [Caglio, Darst, and Kalemli-Ozcan \(2021\)](#), [Mendoza \(2002\)](#), [Mendoza \(2010\)](#), [Bianchi \(2011\)](#), [Bianchi and Mendoza \(2010\)](#), [Dávila and Korinek \(2018\)](#), [Drechsel and Kim \(2021\)](#), [Guerrieri and Iacoviello \(2015\)](#), [Benigno, Foerster, Otrok, and Rebucci \(2020\)](#), [Aruoba, Cuba-Borda, Higa-Flores, Schorfheide, and Vilalvazo \(2021\)](#), [Jensen, Petrella, Ravn, and Santoro \(2019\)](#), [Chatterjee and Eyigungor \(2015\)](#), [Gomes, Jermann, and Schmid \(2016\)](#), [Jungherr and Schott \(2020\)](#), [Khan and Thomas \(2013\)](#)

3.5 Earnings-based borrowing constraints [Lecture 9, Assignment 3]

- Micro evidence from loan covenants
- Predictions on responses to shocks relative to collateral constraints
- Testing the predictions for investment shocks
- Earnings-based constraints in a quantitative business cycle model

References: [Drechsel \(2023\)](#), [Lian and Ma \(2021\)](#)

4. Models with information asymmetries and risky debt

4.1 Basic models [Lecture 10 and 11, Assignment 4]

- The Bernanke-Gertler and Bernanke-Gertler-Gilchrist models
- Microfoundations: costly-state verification (CSV)

References: [Bernanke and Gertler \(1989\)](#), [Bernanke, Gertler, and Gilchrist \(1996\)](#), [Bernanke, Gertler, and Gilchrist \(1999\)](#), [Carlstrom and Fuerst \(1997\)](#), [Townsend \(1979\)](#), [Townsend \(1988\)](#)

4.2 Applications, extensions, issues, alternatives [Lecture 12, Assignment 4]

- Application to financial intermediation and monetary policy
- The role of risk shocks
- Macroeconomic propagation and the optimal contract
- Risk premia with perfect information
- Risk premia with multiplicity

References: [Gilchrist and Zakrajšek \(2012\)](#), [Krishnamurthy and Muir \(2017\)](#), [Gertler and Karadi \(2011\)](#), [Fuerst \(1995\)](#), [Carlstrom, Fuerst, and Paustian \(2016\)](#), [Dmitriev and Hoddenbagh \(2017\)](#), [Christiano, Motto, and Rostagno \(2014\)](#), [Gomes, Jermann, and Schmid \(2016\)](#), [Jungherr and Schott \(2020\)](#), [Di Tella and Hall \(2019\)](#), [Cui and Kaas \(2018\)](#), [Guntin \(2022\)](#)

5. Financial intermediation, banks and bank runs [Lecture 13]

- The classic Diamond-Dybvig model of bank runs
- DSGE models with bank run dynamics

- Top incomes, financial intermediation, and small firms

References: [Diamond and Dybvig \(1983\)](#), [Peck and Shell \(2003\)](#), [Gertler and Karadi \(2011\)](#), [Gertler and Kiyotaki \(2015\)](#), [Brunnermeier, Eisenbach, and Sannikov \(2012\)](#), [He and Krishnamurthy \(2013\)](#), [Adrian and Shin \(2010\)](#), [Adrian and Boyarchenko \(2013\)](#), [Drechsler, Savov, and Schnabl \(2017\)](#), [Martinez-Miera and Repullo \(2017\)](#), [Doerr, Drechsel, and Lee \(2020\)](#)

6 Bubbles [Lecture 14]

- An intro to bubbles
- Different theories of bubbles
- Are bubbles consistent with rational behavior?

References: [Blanchard and Watson \(1982\)](#), [Brunnermeier \(2009\)](#), [Brunnermeier and Oehmke \(2013\)](#), [Martin and Ventura \(2018\)](#), [Simsek \(2021\)](#)

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