European University Institute
Department of Economics
This version: July 19, 2021

Outline of Macroeconomics Sequence (2021-2022)

Core courses (Year 1, compulsory)

Core 1: Dynamic Fiscal and Monetary Policy (Russell Cooper, russell.cooper@eui.eu)
Core 2A: Dynamic Programming and Real Business Cycles (Jesus Bueren, jesus.bueren@eui.eu)
Core 2B: New Keynesian Economics (Edouard Challe, edouard.challe@eui.eu)
Core 3A: Search Theory (Edouard Challe, edouard.challe@eui.eu)
Core 3B: Incomplete Markets (Alexander Monge-Naranjo, Alexander.Monge-Naranjo@eui.eu)

Advanced courses (Year 2+, elective)

Advanced 1: Firm Dynamics [half-credit]
(Basile Grassi, basile.grassi@gmail.com)
Advanced 2: Quantitative Methods and Applications: Dynamic Factor Demand [half-credit]
(Russell Cooper, russell.cooper@eui.eu)
Advanced 3: Fiscal and Monetary Policy and Institutions in a Century of Crises [full-credit]
(Ramon Marimon, ramon.marimon@eui.eu)
Advanced 4: Asset Pricing and Bubbles [half-credit]
(Edouard Challe, edouard.challe@eui.eu)
Advanced 5: Life-Cycle Heterogeneous Agents Models: Solution and Estimation [full-credit]
(Jesus Bueren, jesus.bueren@eui.eu)
Advanced 6: Computations and Quantitative Models in Macro [half-credit]
(Alexander Monge-Naranjo, Alexander.Monge-Naranjo@eui.eu)
Advanced 7: Topics on Housing and the Macroeconomy [half-credit]
(Antonia Díaz, andiaz@eco.uc3m.es)
Advanced 8: Macro Models with Exogenous and Endogenous Incomplete Markets [half-credit] **TBC**
(Árpád Ábrahám, arpad.abraham@bristol.ac.uk)
Advanced 9: Inequality and Education [full-credit]
(Alexander Monge-Naranjo, Alexander.Monge-Naranjo@eui.eu)
Advanced 10: Topics in Banking and Finance [half-credit]
(Thorsten Beck, thorsten.beck@eui.eu)
Advanced 11: Optimal Fiscal Policy in (Quantitative) Macro Models [half-credit]
(Axelle Ferriere, axelle.ferriere@psemail.eu)

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Advanced 12: International Macroeconomics [full-credit]
(Giancarlo Corsetti, gc422@cam.ac.uk)
Advanced 13: Liquidity Traps and Secular Stagnation [half-credit]
(Edouard Challe, edouard.challe@eui.eu)
Advanced 14: Frontiers of Macro-Labor [half-credit]
(Cristina Lafuente Martinez, Cristina.Lafuente@eui.eu)

Timing

	Block I	Block II	Block III	Block IV
Core courses		1	2	3
Advanced courses	1-4	5-8	9-11	12-14

Contents of core courses

Core 1: Dynamic Fiscal and Monetary Policy (Russell Cooper)

This course introduces students to macroeconomic analysis and policies through the lens of the Overlapping-Generations (OLG) model.

Topics covered:

- Two-period optimization problems
- Real overlapping generations models (capital, public debt, aggregate shocks)
- Money and stationary Rational Expectations Equilibria (with flexible versus sticky prices)
- Stability and indeterminacy of equilibrium in 1- and 2-dimensional models

Teaching material:

- Lecture notes and journal articles
- Costas Azariadis. *Intertemporal Macroeconomics*. Blackwell Publishing Company, 1993
- David De La Croix, Philippe Michel, et al. *A Theory of Economic Growth: Dynamics and Policy in Overlapping Generations*. Cambridge University Press, 2002

Grading: Final exam

Core 2A: Dynamic Programming and Real Business Cycles (Jesus Bueren)

This course covers infinite-horizon optimization via dynamic programming (both deterministic and stochastic) as well as its application to some simple partial- and general-equilibrium models.

Topics covered:

- Equilibrium with complete markets (static exchange economies, exchange economies with infinitely lived agents –without and with uncertainty)
- Dynamic programming (sequential versus recursive formulation, the principle of optimality, the contraction mapping theorem, discrete state-space methods, neoclassical growth, recursive competitive equilibrium)
- Stochastic dynamic programming (RBC and Lucas-Tree models, the Permanent-Income Hypothesis, precautionary savings)

Teaching material:

- Lars Ljungqvist and Thomas J Sargent. *Recursive Macroeconomic Theory*. MIT press, 2018
- Jerome Adda, Russell Cooper, and Russell W Cooper. *Dynamic Economics: Quantitative Methods and Applications*. MIT press, 2003
- Nancy L Stokey and Robert E Lucas. *Recursive Methods in Economic Dynamics*. Harvard University Press, 1989

Grading: Problem sets (10%) and final exam (90%)

Core 2B: New Keynesian Economics (Edouard Challe)

This course introduces students to the New Keynesian model. It derives the New Keynesian Phillips curve from nominal rigidities and studies how it interacts with aggregate demand to jointly determine output, employment and inflation over the business cycle. It also covers various dimension of monetary policy, from its optimality to its implementation via simple policy rules.

Topics covered:

- Log-linearization of macroeconomic models
- The dynamic IS curve and the New Keynesian Phillips curve
- Monetary policy rules
- Optimal monetary policy under discretion versus commitment

Teaching material:

- Jordi Galí. *Monetary Policy, Inflation, and the Business Cycle: An Introduction to the New Keynesian Framework and Its Applications, Second Edition*. Princeton University Press, 2015
- Edouard Challe. *Macroeconomic Fluctuations and Policies*. MIT Press, 2019
- Journal articles

Grading: Problem sets (10%) and final exam (90%)

Core 3A: Search Theory (Edouard Challe)

This course provides an introduction to Search theory and some of its applications to labor markets, monetary transactions, and asset markets. Students will learn how to characterise the behaviour of individual agents (e.g., job seekers) in a market with search frictions, and how these choices aggregate to determine (potentially inefficient) macroeconomic outcomes. Alternative price and wage setting mechanisms (i.e., posting versus bargaining) will be considered.

Topics covered:

- Basic job search
- Equilibrium search and endogenous wage dispersion
- Job creation and the Diamond-Mortensen-Pissarides model
- Competitive search
- Money search, OTC markets

Teaching material:

- Pierre Cahuc, Stéphane Carcillo, and André Zylberberg. *Labor Economics*. MIT press, 2014
- Dale Mortensen. *Wage Dispersion: Why Are Similar Workers Paid Differently?* MIT press, 2003
- Christopher A Pissarides. *Equilibrium Unemployment Theory*. MIT press, 2000
- Journal articles

Grading: Problem sets (10%) and final exam (90%)

Core 2B: Incomplete Markets (Alexander Monge-Naranjo)

This course covers the basic dynamic models of incomplete markets that must be familiar to all research economists, not just those doing macro. In the first lecture, we overview the different directions that we can take to incorporate contractual frictions and incompleteness in financial markets. In the following three lectures develop the baseline dynamic incomplete markets model. We start by characterizing the individual's optimization problems and then derive some of the key general equilibrium implications. We then sketch a few extensions, including models with aggregate fluctuations and models with equilibrium default. The ensuing three lectures and part of five, are devoted to recursive contracts in the presence of limited commitment or private information problems. Again, we discuss the implications for individual dynamics and for the cross-section of agents. A number of leading examples and applications will be used. If time permits, we will also discuss the design of optimal government policy, with and without commitment.

Topics covered:

- Sketch of computational methods
- Incomplete markets in GE: Aiyagari/Bewley/Huggett

- Incomplete markets with default
- One-sided limited commitment
- Two-sided limited commitment and moral hasard

Teaching material:

- Jerome Adda, Russell Cooper, and Russell W Cooper. *Dynamic Economics: Quantitative Methods and Applications*. MIT press, 2003
- Nancy L Stokey and Robert E Lucas. *Recursive Methods in Economic Dynamics*. Harvard University Press, 1989
- Burkhard Heer and Alfred Maussner. *Dynamic General Equilibrium Modeling: Computational Methods and Applications*. Springer Science & Business Media, 2009
- Mario J Miranda and Paul L Fackler. *Applied Computational Economics and Finance*. MIT press, 2004

Grading: Problem sets (30%) and final exam (70%)

Contents of Advanced Courses

Syllabi in the next pages.

Firm Heterogeneity in Macroeconomics

Basile Grassi
Europena University Institute
Fall 2021

Course objectives

The macroeconomic literature usually assume that production is carried out by one representative firm. However, even within the same narrowly defined industry, firms are greatly different with respect to size, productivity, quality, mark-ups, market power... In the last two decades, macroeconomists have learned to model many of these heterogeneities in a tractable way, and this has lead to great advances in our understanding of the microeconomic determinants of macroeconomic outcomes.
In this course, we start by studying some empirical facts on firm heterogeneity. Then, we will cover the important theoretical models of firm heterogeneity. These will enable us to understand how developments at the firm level determine aggregate productivity, aggregate fluctuations, and, how linkages among firms propagate shocks and distortions. Finally, we will study recent empirical evidence, empirical methodology and models in order to study concentration, markup and market power.

Outline

1. Empirical evidence about firm heterogeneity

Where to find firm-level data. How to use it. Statistical analysis of firm heterogeneity. Review of main empirical regularities. Getting your hand dirty by using data analysis tools.

Reference:
Syverson, "*What Determines Productivity?*", Journal of Economic Literature, 2011.
Haltiwanger, "*Job Creation and Firm Dynamics in the United States*", Innovation Policy and the Economy, 2011.
Haltiwanger, Jarmin and Miranda, "*Who Creates Jobs? Small versus Large versus Young*", The Review of Economics and Statistics, 2013.
Decker, Haltiwanger, Jarmin, and Miranda, "*The Role of Entrepreneurship in US Job Creation and Economic Dynamism*", Journal of Economic Perspectives, 2014.
Hottman, Redding and Weinstein, "*Quantifying the Sources of Firm Heterogeneity*", The Quarterly Journal of Economics, 2016.

2. Firm Heterogeneity and Network

What are the origin of the business cycle? Role of Heterogeneity? Of Input-Output Network? Theory: Hulten's theorem. Quantitative Granular Model. Input-Output Networks and Comovement.

References:

Gabaix, "*The Granular Origins of Aggregate Fluctuations*", Econometrica, 2011.
Baqaee and Fahri, "*Beyond Hulten Theorem*", Econometrica, Forthcoming.
Acemoglu, Carvalho, Ozdaglar and Tahbaz-Salehi, "*The Network Origins of Aggregate Fluctuations*", Econometrica, 2012.
Carvalho and Grassi, "*Large Firm Dynamics and the Business Cycle*", American Economics Review, 2019.
Grassi and Sauvagnat, "*Policy in Production Networks*", OXREP, 2020.
Carvalho *"From micro to macro via production networks"*,. Journal of Economic Perspectives, 2014

3. Concentration, Markup and Market Power

Are we observing an increase in concentration? markup? market power? Empirics: How to estimate markup. Coding it in `Python`. Consequences: welfare loss, labor share, inequality ; Causes: technology? policy?

References:

Autor, Dorn, Katz, Patterson, and Van Reenen *"The Fall of the Labor Share and the Rise of Superstar Firms"*, MIT Working Paper, May 2, 2017
De Loecker, Eeckhout and Unger *"The Rise of Market Power and the Macroeconomic Implications"* Quaterly Journal of Economics, 2020
Gutiérrez and Phillipon *"Declining Competition and Investment in the US"*, NBER Working Paper, 2017
Burstein, Carvalho, Grassi *"Bottom-up Markup Fluctuations"*, NBER Working Paper, 2020
Atkeson and Burstein, *"Pricing-to-Market, Trade Costs, and International Relative Prices"* American Economic Review, 2008
Bond, Hashemi, Kaplan, and Zoch, *"Some Unpleasant Markup Arithmetic: Production Function Elasticities and their Estimation from Production Data"*, Journal of Monetary Economics, 2021
De Ridder, Grassi and Morzenti, *"The Hitchhiker's Guide to Markup Estimation"*, mimeo, 2021

Evalutation

- Problem sets (take home).
- One research proposal: up to 2 pages of (i) research question (ii) how does it fit in the literature (iii) what is the plan to answer it.

Russell Cooper
Fall 2021

Quantitative Methods and Applications: Dynamic Factor Demand

Goal

These lectures study decision problems of firms in a dynamic stochastic setting. To do so, the course will develop a number of tools and then apply them to the firms' choice problems and, in some cases, an equilibrium outcome.

A primary tool is dynamic programming. The course will build upon the basic foundations for dynamic programming, both in theory and through numerical analysis. Another tool is the use of simulated method of moments to estimate parameters of dynamic economic models. These were taught in the first year core courses and will be reviewed at the start of this course.

The main focus will be on dynamic factor demand, both capital and labor. These applications will use and further develop the tools taught in the first part of the course. In addition, policy dimensions of the applications will be developed.

Requirements

You will have a requirement to write a paper following the structure of the summer report.

Reading List

The lecture plan with a subset of relevant readings is provided below. Entries with a * will be the basis of class lecture. Notes will be posted for various sections of the course.

Material for the course will be drawn from

Jérôme Adda and Russell Cooper, Dynamic Economics: Quantitative Methods and Applications, MIT Press, 2003. (AC)

Class 1: Overview

- * AC, Chpt. 2, 3, 4
- Bertsekas, D. Dynamic Programming and Stochastic Control, New York: Academic Press, 1976.
- * Cooper, R. "Overview of Dynamic Programming ," September 2019.
- Judd, K " Review of Recursive Methods in Economic Dynamics," Journal of Economic Literature, 29 (1991), 69-77.
- Sargent, T. Dynamic Macroeconomic Theory, Cambridge, Mass.:Harvard University Press: 1987, chapter 1.
- * Stokey, N and R. Lucas, Recursive Methods in Economic Dynamics, Cambridge, Mass.: Harvard University Press, 1989. Chpt 3,9

Class 2–4: Firm Dynamics: Capital

- * AC, Chpt. 8

- Abel, A. and J. Eberly, "A Unified Model of Investment Under Uncertainty," *American Economic Review*, 94 (1994), 1369-84.
- Bachmann, Rüdiger, and Christian Bayer. "'Wait-and-See'business cycles?." *Journal of Monetary Economics* 60, no. 6 (2013): 704-719.
- #Buera, Francisco J., and Yongseok Shin. "Financial frictions and the persistence of history: A quantitative exploration." *Journal of Political Economy* 121, no. 2 (2013): 221-272.
- *Bloom, Nicholas. "The impact of uncertainty shocks." *Econometrica* 77, no. 3 (2009): 623-685.
- # Bloom, Nicholas, Max Floetotto, Nir Jaimovich, Itay Saporta−Eksten, and Stephen J. Terry. "Really uncertain business cycles." *Econometrica* 86, no. 3 (2018): 1031-1065.
- Caballero, R. and E. Engel, "Explaining Investment Dynamics in U.S. Manufacturing: A Generalized (S,s) Approach", *Econometrica*, 67 (1999), 783-826.
- Caballero, R., E. Engel and J. Haltiwanger, "Plant Level Adjustment and Aggregate Investment Dynamics," *Brookings Papers on Economic Activity*, 2 (1995b), 1-39.
- Cooley, Thomas F., and Vincenzo Quadrini. "Financial markets and firm dynamics." *American economic review* 91, no. 5 (2001): 1286-1310.
- Cooper, R. and J. Ejarque, "Exhuming Q: Market Power vs. Capital Market Imperfections," NBER Working Paper #8182, March 2001. (http://papers.nber.org/papers/W8182)
- * Cooper, R. and J. Ejarque, "Financial Frictions and Investment: A Requiem in Q," *Review of Economic Dynamics*, 6 (2003), 710-28.
- * Cooper, R. and J. Haltiwanger, "On the Nature of Capital Adjustment Costs," *Review of Economic Studies*, 73 (2006), 611-33.
- Cooper, R., J. Haltiwanger and L. Power, "Machine Replacement and the Business Cycle: Lumps and Bumps", *American Economic Review*, 89 (1999), 921-946.
- Cooper, R., J. Haltiwanger and J. Willis, "Euler Equation Estimation for Discrete-Choice Models: A Capital Accumulation Application" November 2005.
- #David, Joel M., Hugo A. Hopenhayn, and Venky Venkateswaran. "Information, misallocation, and aggregate productivity." *The Quarterly Journal of Economics* 131, no. 2 (2016): 943-1005.
- #David, Joel M., and Venky Venkateswaran. "The sources of capital misallocation." *American Economic Review* 109, no. 7 (2019): 2531-67.
- # Gilchrist, Simon, and Egon Zakrajšek. "Credit spreads and business cycle fluctuations." *American Economic Review* 102, no. 4 (2012): 1692-1720.
- # Gomes, Joao F. "Financing investment." *American Economic Review* 91, no. 5 (2001): 1263-1285.
- #Khan, Aubhik, and Julia K. Thomas. "Idiosyncratic shocks and the role of nonconvexities in plant and aggregate investment dynamics." *Econometrica* 76, no. 2 (2008): 395-436.
- *Thomas, J. "Is Lumpy Investment Relevant for the Business Cycle?" *Journal of Political Economy* 110, no. 3 (2002): 508-534.

Class 5-6: Firm Dynamics: Labor

- *AC, Chpt. 9
- Caballero, R. and E. Engel, "Microeconomic Adjustment Hazards and Aggregate Dynamics", *Quarterly Journal of Economics*, 108 (1993), 313-58.
- Caballero, R., E. Engel and J. Haltiwanger, "Aggregate Employment Dynamics: Building from Microeconomic Evidence", *American Economic Review*, 87 (1997), 115-137.
- Cooper, Russell, and Jonathan L. Willis. "A comment on the economics of labor adjustment: Mind the gap." *American Economic Review* (2004): 1223-1237.
- * Cooper, R., Gong, G and P. Yan, "Costly Labor Adjustment: General Equilibrium Effects of China's Employment Regulations and Financial Reforms", *Economic Journal* (2017): 1879- 1922.
- #Hopenhayn, Hugo, and Richard Rogerson. "Job turnover and policy evaluation: A general equilibrium analysis." *Journal of political Economy* 101, no. 5 (1993): 915-938.
- #Hsieh, Chang-Tai, and Peter J. Klenow. "Misallocation and manufacturing TFP in China and India." *The Quarterly Journal of Economics* 124, no. 4 (2009): 1403-1448.

Class 7: Labor Search

- *Cooper, R. and J. Haltiwanger and J. Willis, "Search frictions: Matching aggregate and establishment observations" *Journal of Monetary Economics(2007),* 56-78.
- #Menzio, Guido, and Shouyong Shi. "Directed search on the job, heterogeneity, and aggregate fluctuations." *The American Economic Review* (2010): 327-332.
- #Shimer, R. "The Cyclical Behavior of Equilibrium Unemployment and Vacancies" *The American Economic Review* (2005): 25-49.
- *Wolpin, K. "Estimating a structural search model: the transition from school to work." *Econometrica (1987),* 801-817.

European University Institute
Department of Economics
Fall 2021 (Block I)
9:00 – 11:00, Wednesdays and some Fridays[1]

Advanced Macro

Fiscal and monetary policy and institutions in a century of crises
(from theories to proposals for EU fiscal and social policies)

Ramon Marimon[2]

This advanced (full-credit) course is open to everyone, from 2nd year graduates on, but specially designed for 2nders. The course is self-contained, although familiarity with recursive methods is recommended. As the subtitle indicates, the three crises of the 21st Century will be on the background of the course. Both, in terms of the theoretical and economic policy issues that they have unveiled, and in terms of the new developments in macro-finance that have come out, and are coming out, from them. For students taking the course for credit, in principle, the grade of the course will be mostly [75%] based on a short project, which can be done by one or two of you (three will require approval and more work). It will consist of: 1) choosing, and briefly explaining, a specific problem/question/topic of the 21st Century crises that you think deserves more research [20%]; 2) *critically* summarize the 'state-of-the-art' by *deconstructing* one article, or two and, possibly, make reference to others [20%], and 3) propose how would you pursue the research on the topic if you had more time [20%] (if you have more than a proposal this would be counted as 'extra') [+ 15% overall assessment and presentation]. The presentation will consist of a draft of no more than 10 pages (min 11pt, single space and proper borders; not counting references and possible 'extra' material) and, time permitting, a short in class (or online) presentation. In addition, there will be a short (possibly in-person) exam [15%] and I will also count class participation [10%].

[1] 15/09, 22/09, 29/09, 6/09, 8/10, 13/10, 15/10, 20/10, 22/10, 27/10.
[2] Course materials, updated through the course, and office hours in **Brightspace.** (*) articles should be read in advance of the lecture.

Syllabus

1. Introduction. Asset Prices and Policy Design. Equivalence results.

We first revise some basic elements of the inter-temporal individual agent's problem – e.g. the Stochastic Discount Factor (SDF) -- and of asset pricing accounting, to conclude that "*it's all in agents' SDFs and in getting the prices right*". We then look at Ricardian (budget) equivalence and, after going through its formulation, at Ramsey (SDF) equivalence.

Chari, V.V. and Patrick J. Kehoe. 1999. "Optimal Fiscal and Monetary Policy," in John B. Taylor and Michael Woodford eds. *Handbook of Macroeconomics* Volume 1, Part C, 1671-1745 (also NBER WP 6891).

Chari, V.V., Juan Pablo Nicolini and Pedro Teles. 2020. "Optimal Capital Taxation Revisited," *Journal of Monetary Economics,* forthcoming.

*Correia, Isabel, Juan Pablo Nicolini and Pedro Teles. 2008. "Optimal Fiscal and Monetary Policy: Equivalence Results," *Journal of Political Economy,* 116(1), 141-170.

Ljungqvist & Sargent, 2018 (8.7, 10.1 – 10.3, 13.1 – 13.10, 16.1 – 16.8, 20.1 – 20.2 & 27.1 – 27.3).

*Lucas, Robert E., Jr. 1978."Asset Prices in an Exchange Economy," *Econometrica*, 46(6), 1429-1445.

2. Financial frictions and wedges, behind fluctuations and financial crises. With a brief introduction to Recursive Contracts.

Financial frictions and, more generally, 'wedges' (due to taxes, limited market participation, limited enforcement, etc.) distort SDFs and are at the root macroeconomic fluctuations and crises: "*it's all in the Lagrange multipliers*". Macroprudential policy is about undoing some of these frictions. Recursive Contracts are most suitable to study constrained dynamic models.

Farhi, Emmanuel and Iván Werning, 2016. "A Theory of Macroprudential Policies in the Presence of Nominal Rigidities," *Econometrica,* 84 (5), 1645-1704.

Gertler, Mark and Nobu Kiyotaki, 2011. "Financial Intermediation and Credit Policy in Business Cycle Analysis," in *Handbook of Monetary Economics*, Vol. 3A.

(*) Gertler, Mark, Nobu Kiyotaki and Andrea Prestipino, 2020. "A Macroeconomic Model with Financial Panics," *Review of Economic Studies*, 87(1) 240-288.

(*) Kiyotaki, Nobu and John Moore. 1997. "Credit Cycles," *Journal of Political Economy,* 105(2), 1477-1507.

Kiyotaki, Nobu and John Moore. 2019. "Liquidity, Business Cycles and Monetary Policy," *Journal of Political Economy*, 127(6), 2926-2966.

Marcet, Albert and Ramon Marimon, 2019. "Recursive Contracts," *Econometrica,* 87(5), 1589 – 1631

Quadrini, Vincenzo, 2011. "Financial Frictions in Macroeconomic Fluctuations," *Economic Quarterly,* 97(3), 209-254.

3. Different dynamic equilibria, supporting crises; with a brief introduction to macro-learning models.

How agents form expectations defines their beliefs, which are part of the SDF, and therefore can determine different equilibria: *"it's all about beliefs and managing expectations"* (recall, *"growth is all about ideas"*, pity we don't have time to cover growth). We will review/reassess Rational Expectations (Self-Fulfilling), Self-Confirming and Misspecified Equilibria, and how they can help to model crises *et al*. To do so, it may require a brief introduction to macro-learning models; e.g. how subjective and objective beliefs interact (e.g. from the Perceived Law of Motion, PLM, to the Actual Law of Motion, ALM).

Adam, Klaus, Albert Marcet, and Juan Pablo Nicolini. 2016. "Stock Market Volatility and learning," *Journal of Finance,* 71(1), 33-82.

Adam, Klaus, Johannes Beutel and Albert Marcet. 2017. "Stock Price Booms and Expected Capital Gains," *American Economic Review,* 107(8), 2352-2408.

Aguiar, Mark and Manuel Amador, 2019. "Self-fulfilling Debt Dilution: Maturity and Multiplicity in Debt Models," Princeton University.

Ayres, João, Gaston Navarro, Juan Pablo Nicolini and Pedro Teles, 2018. "Sovereign Default: The Role of Expectations," *Journal of Economic Theory,* 175, 803 – 812.

Ayres, João, Gaston Navarro, Juan Pablo Nicolini and Pedro Teles, 2019. "Self-Fulfilling Debt Crises with Long Stagnations," *Federal Reserve Bank of Minneapolis*, wp 757.

(*) Evans, George W. and Seppo Honkapohja. 2001. *Learning and Expectations in Macroeconomics*. Princeton University Press. Chs. 1 & 2.

(*) Calvo, Guillermo, 1988. "Servicing the Public Debt: The Role of Expectations," American Economic Review, 78, 647 - 661.

Cole, Harold and Timothy Kehoe, 2000. "Self-Fulfilling Debt Crises," *The Review of Economic Studies*, 67, 91 - 116.

Gaballo, Gaetano, and Ramon Marimon. 2021. "Breaking the Spell with Credit-Easing: Self-Confirming Credit Crises in Competitive Search Economies," *Journal of Monetary Economics,* 119, April.

Hansen, Lars Peter. 2014. "Nobel Lecture: Uncertainty Outside and Inside Economic Models," *Journal of Political Economy,* 122 (5): 945-987.

Marcet, Albert and Juan P. Nicolini. 2003. "Recurrent Hyperinflations and Learning." American Economic Review 93 (5):1476-1498.

Sargent, Thomas J. 1999. *The Conquest of American Inflation*. Princeton University Press. Ch. 3 - 6.

Woodford, Michael. 2013. "Macroeconomic Analysis without the Rational Expectations Hypothesis," *Annual Review of Economics* 5: 303-346.

4. Debt as a source and outcome of crises.

We then take a closer look at private and sovereign debt, starting with "the value of debt", which will take us to "*it's all in The Fiscal Theory of the Price Level*", then moving into 'Debt as Money' and how major crises and wars are financed and – time permitting – on what happens when 'r-g<0'?

Aguiar, Manuel and Manuel Amador, 2014. "Sovereign Debt," in *Handbook of International Economics*, Vol. 4, pp. 647 - 687. North Holland.

Aguiar, Manuel and Harold Cole, 2016. "Quantitative Models of Sovereign Debt Crises**,"** in *Handbook of Macroeconomics*, Vol. 4.

Angeletos, George-Marios, Fabrice Collard and Harris Dellas, 2020. *"Public Debt as Private Liquidity,"* CEPR Discussion Paper 15488.

Arellano, Cristina, 2008. "Default Risk and Income Fluctuations in Emerging Markets*,"* *American Economic Review*, 98(3), 690 - 712.

(*) Cochrane, John H. 2019. "The Value of Government Debt," NBER Working Paper 26090.

Cochrane, John H. 2021, *The Fiscal Theory of the Price Level*, Princeton University Press, forthcoming. Chs. 2 & 3. (*) Watch his EUI – PWC Lecture, May 13, 2021.

Hall, George J. and Thomas Sargent, 2020. "Debt and Taxes in Eight U.S. Wars and Two Insurrections", New York University.

Reis, Ricardo, 2021. "The constraint on public debt when $r < g$ but $g < m$," LSE.

Sargent, Thomas J. 2012. "Nobel Lecture: United States Then, Europe Now," *Journal of Political Economy,* 120, 1, 1-40.

5. Designing an Economic and Monetary Union (EMU).

We conclude with *"it's all about optimal mechanism design",* starting with a closer look into the peculiar European EMU, its institutions and policies – say, in contrast with the USA—, to better understand strengths and weaknesses and propose a 'constrained efficient mechanism' for the EMU after the 2020 - … pandemic.

Dovis, Alessandro, 2019. "Efficient Sovereign Default," *Review of Economic Studies*, 86, 282-312.

(*) Ábrahám, Árpad, Eva Cárceles-Poveda, Yan Liu and Ramon Marimon, 2021. "On the Optimal Design of a Financial Stability Fund,"M EUI.

Ferrari, Alessandro, Ramon Marimon and Chima Simpson-Bell, 2021. "Fiscal and Currency Union with Default and Exit," EUI.

Liu, Yan, Ramon Marimon and Adrien Wicht, 2021."Making Sovereign Debt Safe with a Financial Stability Fund," EUI

(*) Marimon, Ramon and Adrien Wicht, 2021. "Euro area fiscal policies and capacity in post-pandemic times" (with), *European Parliament, Economic Governance Support Unit*, PE 651.392.

Müller, Andreas, Kjetil Storesletten and Fabrizio Zilibotti, 2019. "Sovereign Debt and Structural Reforms," *American Economic Review,* 109(12), 4220 – 4259.

6. Extra?. Designing fiscal- social policies for the incoming (ageing) crisis.

In studying crises – for example, of this century – *"it's all about linkages".* For example: the 2017-2019 financial crisis, the 'economic stability – financial stability linkage'; the euro-area debt crisis (2010 – 2012), the 'economic stability – debt sustainability linkage'; the (2020 - …) Covid-19 crisis, the 'economic stability – health security linkage', and the incoming Social Security crisis, 'the fiscal-social protection and ageing linkage'. Having covered the lived-ones in the previous topics, if there is time and willingness, we may as well cover the next.

Díaz-Saavedra, Julián, Ramon Marimon and João Brogueira de Sousa, 2021. "A Worker's Backpack as Alternative to PAYG Pension Systems," EUI.

European University Institute
Department of Economics
Block I (Fall 2021)
This version: July 19, 2021

Asset Pricing and Bubbles

Edouard Challe
edouard.challe@gmail.com

Course objective

This half-credit course covers the theory of rational bubbles in asset prices. It focuses on (i) the sources of asset bubbles, i.e., which frictions (dynamic inefficiency, financial frictions, agency problems...) may give rise to bubbly equilibria; (ii) their macroeconomic implications (for efficiency, growth, instability, capital flows, factor misallocation...); and (iii) their policy implications (for monetary, fiscal and macro-prudential policy).

Grading

Grading will be based on a referee report (50%) and a 20-minute in-class presentation (50%).

Topics

General reading

- Stephen F Le Roy. Rational exuberance. *Journal of Economic Literature*, 42(3):783–804, 2004
- Gadi Barlevy. Economic theory and asset bubbles. *Economic Perspectives*, 31(3), 2007
- Alberto Martin and Jaume Ventura. The macroeconomics of rational bubbles: a user's guide. *Annual Review of Economics*, 10:505–539, 2018

Review of bubbleless asset pricing

- Robert E Lucas Jr. Asset prices in an exchange economy. *Econometrica*, pages 1429–1445, 1978
- John Y Campbell. Asset prices, consumption, and the business cycle. *Handbook of Macroeconomics*, 1:1231–1303, 1999
- John Y Campbell and Robert J Shiller. Stock prices, earnings, and expected dividends. *Journal of Finance*, 43(3):661–676, 1988
- John H Cochrane. Production-based asset pricing and the link between stock returns and economic fluctuations. *Journal of Finance*, 46(1):209–237, 1991

Partial-equilibrium models of asset bubbles

- Olivier Jean Blanchard. Speculative bubbles, crashes and rational expectations. *Economics Letters*, 3(4):387–389, 1979
- Behzad T Diba and Herschel I Grossman. On the inception of rational bubbles. *The Quarterly Journal of Economics*, 102(3):697–700, 1987
- K.A. Froot and M. Obstfeld. Intrinsic bubbles: the case of stock prices. *American Economic Review*, 81(5):1189–1214, 1991

Dynamic (in)efficiency and rational asset bubbles

- Andrew B Abel, N Gregory Mankiw, Lawrence H Summers, and Richard J Zeckhauser. Assessing dynamic efficiency: Theory and evidence. *The Review of Economic Studies*, 56(1):1–19, 1989
- François Geerolf. Reassessing dynamic efficiency. *manuscript*, 2018
- Jean Tirole. Asset bubbles and overlapping generations. *Econometrica*, pages 1499–1528, 1985
- Manuel S Santos and Michael Woodford. Rational asset pricing bubbles. *Econometrica*, pages 19–57, 1997
- Philippe Weil. Confidence and the real value of money in an overlapping generations economy. *Quarterly Journal of Economics*, 102(1):1–22, 1987
- Pierre Cahuc and Edouard Challe. Produce or speculate? asset bubbles, occupational choice, and efficiency. *International Economic Review*, 53(4):1105–1131, 2012

The role of financial frictions

- Emmanuel Farhi and Jean Tirole. Bubbly liquidity. *Review of Economic Studies*, 79(2):678–706, 2012
- Jianjun Miao and Pengfei Wang. Asset bubbles and credit constraints. *American Economic Review*, 108(9):2590–2628, September 2018
- Jianjun Miao, Pengfei Wang, and Jing Zhou. Asset bubbles, collateral, and policy analysis. *Journal of Monetary Economics*, 76:S57–S70, 2015
- Narayana R Kocherlakota. Bubbles and constraints on debt accumulation. *Journal of Economic Theory*, 57(1):245–256, 1992
- Narayana Kocherlakota. Bursting bubbles: Consequences and cures. *Unpublished manuscript, Federal Reserve Bank of Minneapolis*, 2009
- Alberto Martin and Jaume Ventura. Managing credit bubbles. *Journal of the European Economic Association*, 14(3):753–789, 2016
- Vasco M Carvalho, Alberto Martin, and Jaume Ventura. Understanding bubbly episodes. *American Economic Review*, 102(3):95–100, 2012
- Benjamin Larin. Bubble-driven business cycles. unpublished, 2020

Asset bubbles and long-run growth

- Tomohiro Hirano and Noriyuki Yanagawa. Asset bubbles, endogenous growth, and financial frictions. *Review of Economic Studies*, 84(1):406–443, 2016
- Gene M Grossman and Noriyuki Yanagawa. Asset bubbles and endogenous growth. *Journal of Monetary Economics*, 31(1):3–19, 1993
- Alberto Martin and Jaume Ventura. Economic growth with bubbles. *American Economic Review*, 102(6):3033–58, 2012
- Jacques Olivier. Growth-enhancing bubbles. *International Economic Review*, 41(1):133–152, 2000
- Pablo Guerrón-Quintana, Tomohiro Hirano, and Ryo Jinnai. Recurrent bubbles and economic growth. 2020

Asset bubbles as risk shifting

- Franklin Allen and Douglas Gale. Bubbles and crises. *Economic Journal*, 110(460):236–255, 2000
- Edouard Challe and Xavier Ragot. Bubbles and self-fulfilling crises. *The BE Journal of Macroeconomics*, 11(1), 2011
- Gadi Barlevy. A leverage-based model of speculative bubbles. *Journal of Economic Theory*, 153:459–505, 2014

Asset bubbles and monetary policy

- Jordi Galí. Monetary policy and rational asset price bubbles. *American Economic Review*, 104(3):721–52, 2014
- Jordi Galí. Monetary policy and bubbles in a new keynesian model with overlapping generations. *American Economic Journal: Macroeconomics*, 13(2):121–67, 2021
- Feng Dong, Jianjun Miao, and Pengfei Wang. Asset bubbles and monetary policy. *Review of Economic Dynamics*, 37:S68–S98, 2020
- Vladimir Asriyan, Luca Fornaro, Alberto Martin, and Jaume Ventura. Monetary policy for a bubbly world. *The Review of Economic Studies*, 88(3):1418–1456, 2021

Asset bubbles and capital flows

- Ricardo J Caballero and Arvind Krishnamurthy. Bubbles and capital flow volatility: Causes and risk management. *Journal of Monetary Economics*, 53(1):35–53, 2006
- Jaume Ventura. Bubbles and capital flows. *Journal of Economic Theory*, 147(2):738–758, 2012
- Aart Kraay and Jaume Ventura. *11 The Dot-Com Bubble, the Bush Deficits, and the US Current Account*. University of Chicago Press, 2007

Life-Cycle Heterogeneous Agents Models: Solution and Estimation.

Jesús Bueren
European University Institute, 2021-2022

Full credit: 20 hours

Objective. The goal of this course is to introduce students to life-cycle heterogeneous agents models solution and estimation methods. For this purpose the first part of the course focuses on life-cycle heterogeneous agents models in general equilibrium. The students are given a set of instructions to solve the Huggett (1996). Then, we revise econometric tools for estimation of structural models using moment matching. We cover the method of moments, the generalized method of moments and simulated method of moments. We derive the asymptotic properties of the estimators and how to compute standard errors in finite samples. Finally, we bring together the theory and the metrics part of the course by estimating preference parameters in a life-cycle model using panel data.

Requirements. This is a computer intensive course. Students are expected to invest in learning/developing their computing skills. Every week the students are given computer assignments to check their understanding of the material covered in class. On top, the students will present a paper of their choice that needs to be discussed with the instructor in advance.

Evaluation. 2/3 computer assignments + 1/3 presentation

References

References

Adda, J., Cooper, R., & Cooper, R. W. (2003). *Dynamic economics: quantitative methods and applications*. MIT press.

Carroll, C. D. (2006). The method of endogenous gridpoints for solving dynamic stochastic optimization problems. *Economics letters*, *91*(3), 312–320.

Fella, G. (2014). A generalized endogenous grid method for non-smooth and non-concave problems. *Review of Economic Dynamics*, *17*(2), 329–344.

Greene, W. H. (2000). Econometric analysis 4th edition. *International edition, New Jersey: Prentice Hall*, 201–215.

Hayashi, F. (2002). *Econometrics* (Vol. 18) (No. 4). Cambridge University Press. doi: 10.1017/S0266466602004115

Huggett, M. (1996). Wealth distribution in life-cycle economies. *Journal of Monetary Economics*, *38*(3), 469–494.

Iskhakov, F., Jørgensen, T. H., Rust, J., & Schjerning, B. (2017). The endogenous grid method for discrete-continuous dynamic choice models with (or without) taste shocks. *Quantitative Economics*, *8*(2), 317–365.

Judd, K. L., & Judd, K. L. (1998). *Numerical methods in economics*. MIT press.

Miao, J. (2020). *Economic dynamics in discrete time*. MIT press.

European University Institute
Department of Economics
Fall 2021
Advanced Block II -- Macroeconomics

Computations and Quantitative Models in Macro

Professor *Alexander Monge-Naranjo*
Alexander.Monge-Naranjo@eui.eu

Description: In this *advanced half-credit* course we will cover a selected set of computational techniques that are used in ongoing quantitative, general equilibrium macro research. Among the topics, we will discuss how to solve nonlinear equations, maximization problems, difference equations, dynamic programming problems, numerical integration, etc. This will be done while studying models with economic growth, and business cycle with heterogenous agents and incomplete markets.

Grading: The grade will be based on problem sets and an original research proposal.

REFERENCES

Background: The course presumes a working knowledge of bounded, stochastic dynamic programming (e.g. Stokey, Lucas and Prescott, ch.3-5 & 9,10), Markov chains (at the level of SLP, ch.11.1.) Further knowledge of Markov Processes would be desirable but the key results will be covered in class. Moreover, some working knowledge of Matlab (or Julia or Python) would be required for solving the problem sets.

Main References: We will follow

QuantEcon: https://quantecon.org/ Source of lectures, codes and much more, put forth by Tom Sargent and John Stachurski.

Moreover, a number of books and other sources can provide support during the class. A preliminary and incomplete list of these sources are:

Adda and Cooper. *Dynamic Economics.* MIT Press, 2003.

Heer and Maussner. *Dynamic General Equilibrium Modeling.* Springer 2004.

Miranda and Fackler. *Applied Computational Economics and Finance.* MIT Press, 2002.

Stachurski. *Economic Dynamics.* MIT Press, 2009.

Syllabus: Topics on Housing and the Macroeconomy

Antonia Díaz

This course aims to provide an overview of some topics regarding the role of Housing in Macroeconomic questions. The evaluation consists of a referee report and/or a presentation of a paper (sessions 2 – 5). The list of papers below is indicative and (possibly) subject to change.

Lecture 1: The issues

- Morris A. Davis & Jonathan Heathcote, 2005. "Housing And The Business Cycle," International Economic Review, vol. 46(3), pages 751-784, August.
- Greg Kaplan & Kurt Mitman & Giovanni L. Violante, 2020. "The Housing Boom and Bust: Model Meets Evidence," Journal of Political Economy, vol. 128(9), pages 3285-3345.
- Jack Favilukis & Sydney C. Ludvigson & Stijn Van Nieuwerburgh, 2017. "The Macroeconomic Effects of Housing Wealth, Housing Finance, and Limited Risk Sharing in General Equilibrium," Journal of Political Economy, vol. 125(1), pages 140-223.

Lecture 2: The role of search and matching frictions

- Morris A. Davis Randall Wright, Philipp Kircher, B. J. and Guerrieri, V. (2017). Directed search: A guided tour. NBER Working Paper 23884.
- Antonia Díaz & Belén Jerez, 2013. "House Prices, Sales, And Time On The Market: A Search-Theoretic Framework," International Economic Review, vol. 54(3), pages 837-872, August.

Lecture 3: Heterogenous agents and search and matching frictions

- Díaz Antonia, Jerez Belén and Rincón-Zapatero, Juan, 2020. "Housing prices and credit constraints in competitive search," UC3M Working papers. Economics 30623, Universidad Carlos III de Madrid.
- Essi Eerola & Niku Maattanen, 2018. "Borrowing constraints and housing market liquidity," Review of Economic Dynamics, Elsevier for the Society for Economic Dynamics, vol. 27, pages 184-204, January.
- Garriga, Carlos, and Aaron Hedlund. 2020. "Mortgage Debt, Consumption, and Illiquid Housing Markets in the Great Recession." *American Economic Review*, 110 (6): 1603-34

Lecture 4: Mobility and misallocation

- Stijn Van Nieuwerburgh & Pierre-Olivier Weill, 2010. "Why Has House Price Dispersion Gone Up?," Review of Economic Studies, Oxford University Press, vol. 77(4), pages 1567-1606.
- Chang-Tai Hsieh & Enrico Moretti, 2019. "Housing Constraints and Spatial Misallocation," American Economic Journal: Macroeconomics, American Economic Association, vol. 11(2), pages 1-39, April.

Lecture 5: Housing Policy

- Jack Favilukis & Pierre Mabille & Stijn Van Nieuwerburgh, 2019. "Affordable Housing and City Welfare," NBER Working Papers 25906, National Bureau of Economic Research, Inc.
- Fajgelbaum, P. D., Morales, E., Suárez Serrato, J. C., & Zidar, O. 2019. State taxes and spatial misallocation. *The Review of Economic Studies*, *86*(1), 333-376.

The list of papers for presentation/referee coming soon

European University Institute
Department of Economics
Winter 2022
Advanced Block II -- Macroeconomics

Labor Markets, Inequality and Macroeconomic Outcomes

Professor *Alexander Monge-Naranjo*
alexmonge@gmail.com

Description: In this *advanced full-credit* course we will cover a number of quantitative papers on how labor markets and the assignment and formation of the human capital of workers shape inequality and macroeconomic outcomes. We will review some mathematical tools (extreme value distributions) that allows for clean analytical solutions and for straightforward aggregation. With this background in place, we will analyze a number of papers that use Roy static models of the labor markets to quantitatively explore inequality and the contribution of human capital on aggregate income. Finally, we will explore a number of more recent -and still ongoing-research that extends those models to dynamic settings and explore the life-cycle dynamics of workers. Computational and quantitative aspects will be center stage in the course and in its evaluation.

Grading: The grade will be based on a take home exam (which will include computing) and a research proposal.

References

I. Main References: Models of Human Capital Assignment & Inequality

- Burstein, A., Morales, E. and Vogel, J. (2019) "*Changes in between-group inequality: computers, occupations, and international trade*." *AEJ Macro.*
- Costinot, A. and Vogel, J. (2010) "Matching and Inequality in the World Economy." *Journal of Political Economy,* vol. 118, no. 4.
- Costinot, A. and Vogel, J. "Beyond Ricardo: Assignment Models in International Trade" Annual Review of Economics, 2015, vol. 7, pp. 31-62

- Dvorkin, M., Monge-Naranjo, A., (2019) *"Occupation Mobility, Human Capital and the Aggregate Consequences of Task-Biased Innovations."*
- Hsieh, C., Hurst, E., Jones, C., and Klenow, P. (2019) *"The Allocation of Talent and U.S. Economic Growth" Econometrica*, 2019
- Lagakos, D., Waugh, M. (2013). "Selection, Agriculture, and Cross-Country Productivity Differences." American Economic Review, 103 (2): 948-80.

II. Other References: Background and Related Literature

- Acemoğlu, D., & Autor, D. (2011). Skills, tasks and technologies: Implications for employment and earnings. In Handbook of labor economics (Vol. 4, pp. 1043{1171). Elsevier.
- Acemoglu, D., & Restrepo, P. (2018). The race between man and machine: Implications of technology for growth, factor shares, and employment. American Economic Review, 108 (6), 1488{1542.
- Acemoglu, D., & Restrepo, P. (2019). Robots and jobs: Evidence from U.S. labor markets. Journal of Political Economy, forthcoming.
- Adao, R., Beraja, M., & Pandalai-Nayar, N. (2018). Skill-biased technological transitions. Working Paper.
- Allen, R. (2009) "Engels' pause: Technical change, capital accumulation, and inequality in the british industrial revolution" Explorations in Economic History, 2009.
- Autor, D., & Dorn, D. (2013). The growth of low-skill service jobs and the polarization of the U.S. labor market. American Economic Review, 103 (5).
- Autor, D., Katz, L. F., & Kearney, M. S. (2006). The polarization of the us labor market. American Economic Review, 96 (2), 189{194.
- Autor, D., Levy, F., & Murnane, R. J. (2003). The Skill Content of Recent Technological Change: An Empirical Exploration. The Quarterly Journal of Economics, 118 (4), 1279-1333.
- Caliendo, L., Dvorkin, M., & Parro, F. (2019). Trade and labor market dynamics: General equilibrium analysis of the China trade shock. Econometrica, 87 (3), 741{835.
- Caselli, F., and Ciccone, A. 2019. "The Human Capital Stock: A Generalized Approach: Comment." *American Economic Review*, 109 (3): 1155-74.
- Caselli, F. "Accounting for Cross-Country Income Differences." 2005. *Handbook of Economic Growth*, Volume 1A. Edited by Philippe Aghion and Steven N. Durlauf, 2005 Elsevier B.V.
- Cortes, M., Nekarda, C., Jaimovich, N., & Siu, H. (2016). The micro and macro of disappearing routine jobs: A flows approach. Working Paper.
- Doms, M., & Lewis, E. (2006). Labor supply and personal computer adoption. Federal Reserve Bank of Philadelphia, Working Paper.
- Eaton, J., & Kortum, S. (2002). Technology, geography, and trade. Econometrica, 70 (5), 1741-1779.
- Foote, C. L., & Ryan, R. W. (2015). Labor-market polarization over the business cycle. NBER Macroeconomics Annual, 29 (1), 371-413.
- Galle, S., RodrIguez-Clare, A., & Yi, M. (2017). Slicing the pie: Quantifying the aggregate and distributional effects of trade. NBER Working Paper.

- Goos, M., & Manning, A. (2007). Lousy and lovely jobs: The rising polarization of work in britain. The Review of Economics and Statistics, 89 (1), 118-133.
- Goos, M., Manning, A., & Salomons, A. (2014, August). Explaining job polarization: Routine biased technological change and offshoring. American Economic Review, 104 (8), 2509-26.
- Greenwood, J., Hercowitz, Z., & Krusell, P. (1997). Long-run implications of investment-specific technological change. American Economic Review, 87 (3), 342-62.
- Guvenen, F., Kuruscu, B., Tanaka, S., & Wiczer, D. (2019). The micro and macro of disappearing routine jobs: A Flows approach. Working Paper.
- Heathcote, J., Perri, F., & Violante, G. L. (2010). Unequal we stand: An empirical analysis of economic inequality in the united states, 1967{2006. Review of Economic dynamics, 13 (1),15-51.
- Hsieh, C.-T., Hurst, E., Jones, C. I., & Klenow, P. J. (2019). The allocation of talent and us economic growth. Econometrica, 87 (5), 1439-1474.
- Jones, B. 2014. ‘‘The Human Capital Stock: A Generalized Approach.’’ *American Economic Review*. 104(11)
- Kambourov, G., & Manovskii, I. (2008). Rising occupational and industry mobility in the United States: 1968{97. International Economic Review, 49 (1), 41-79.
- Kambourov, G., & Manovskii, I. (2009). Occupational mobility and wage inequality. The Review of Economic Studies, 76 (2), 731-759.
- Kambourov, G., & Manovskii, I. (2013). A cautionary note on using (March) Current Population Survey and Panel Study of Income Dynamics data to study worker mobility. Macroeconomic Dynamics, 17 (1), 172-194.
- Krusell, P., Ohanian, L., Rios-Rull, J.-V., & Violante, G. (2000). Capital-skill complementarity and inequality: A macroeconomic analysis. Econometrica, 68 (5), 1029-1053.
- Lagakos, D., Moll, B., Porzio, T., Qian, N., & Schoellman, T. (2018). Life cycle wage growth across countries. Journal of Political Economy, 126 (2), 797-849.
- Lillard, L. A., & Willis, R. J. (1978). Dynamic aspects of earning mobility. Econometrica, 985-1012.

Syllabus – Topics in Banking and Finance

Thorsten Beck

This course aims to provide an overview of the recent empirical banking literature, touching on different topics such as the macro-prudential regulation, fintech, lending techniques and sustainable finance.

The evaluation consists on a referee report and/or a seminar presentation of a paper (sessions 2 – 5) that is part of the syllabus.

Lectures (5 sessions) – Note: the list of papers below is indicative and it is subject to change by the time the course is taught.

Lecture 1: Bank lending technologies

- Mian, Atif R. (2006), "Distance Constraints: The Limits of Foreign Lending in Poor Economies", *Journal of Finance* 61, 1465–1505.
- Beck, Thorsten, Vasso Ioannidou and Larissa Schäfer. 2018. "Foreigners vs. Natives: Bank Lending Technologies and Loan Pricing", *Management Science* 64, 3792-3820.
- Beck, Thorsten, Hans Degryse, Ralph De Haas and Neeltje van Horen. 2018. "When Arm's Length Is Too Far. Relationship Banking over the Credit Cycle", *Journal of Financial Economics* 127, 176-194.

Lecture 2: Deposit Funding and Banks' Lending Policies

- Artavanis, N. , C. Robles-Garcia, A. Seru, and M. Tsoutsoura, "Deposit Withdrawals," Working Paper (https://cepr.org/sites/default/files/deposit_withdrawals_2.pdf)
- Carletti, E., F. De Marco, V. Ioannidou, and E. Sette, 2020, "Banks as Patient Lenders: Evidence from a Tax Reform", *Journal of Financial Economics*, forthcoming.
- Drechsler, I., Savov, A., Schnabl, P., "Banking on deposits: maturity transformation without interest rate risk", *Journal of Finance*, forthcoming.
- Lei Li, Elena Loutskina & Philip E. Strahan, 2019, "Deposit Market Power, Funding Stability and Long-Term Credit", NBER wp: https://www.nber.org/papers/w26163

Lecture 3: FinTechs and Financial Intermediation

- Berg, T., V. Burg, A. Gombović, and M. Puri, 2020, "On the Rise of FinTechs: Credit Scoring using Digital Footprints", *Review of Financial Studies*, 33(7), 2845-2897.
- Fuster A, Goldsmith-Pinkham P, Ramadorai T, Walther A, 2020, "Predictably Unequal? The Effect of Machine Learning on Credit Markets", *The Journal of Finance*.

Lecture 4: Monetary and Macroprudential Policy

- Jiménez Gabriel, Steven Ongena, José Luis Peydró and Jesús Saurina, 2014, Hazardous times for monetary policy: What do twenty-three million bank loans say about the effects of monetary policy on credit risk?, *Econometrica*, 82 (2), 463-505
- Ioannidou Vasso, Steven Ongena and José Luis Peydró, 2015, Monetary policy, risk-taking and pricing: Evidence from a quasi-natural experiment, *Review of Finance*

Lecture 5: Sustainable finance

- Hartzmark, S. M. and A. B. Sussman (2019): Do Investors Value Sustainability? A Natural Experiment Examining Ranking and Fund Flows, J*ournal of Finance 74*, 2789-2837.
- Riedl, A. and P. Smeets (2017): Why Do Investors Hold Socially Responsible Mutual Funds? *Journal of Finance* 72, 2505-2550.

List of papers to choose from for the referee report: tbc

(Tips / advice: Berk, J. B., Harvey, C. R., and Hirshleifer, D. 2017. How to write an effective referee report and improve the scientific review process. *Journal of Economic Perspectives* 31(1): 231 – 244. Available here: https://pubs.aeaweb.org/doi/pdf/10.1257/jep.31.1.231)

Optimal Fiscal Policy in (Quantitative) Macro Models
EUI, Advanced Macro, PhD 2022

Instructor: Axelle Ferrière, e-mail: axelle.ferriere@eui.eu.

Course Overview: Rising inequality has become a major concern in the policy debate. Incomes at the top have grown substantially in the U.S. over the past forty years, whereas below-median incomes have stagnated. In this context, how should a government design a tax-and-transfer system to reduce inequality while promoting growth?

A large literature in macroeconomics has thought about optimal taxes in the context of Ramsey plans, where governments choose optimal tax systems within a narrow class of fiscal tools. We will first review this literature and revisit two fundamental results: capital taxes should be zero, and labor taxes should be smoothed. We will then discuss the recent quantitative macro literature which uses realistically calibrated heterogeneous-agent general-equilibrium models to quantify optimal fiscal policy.

Grading: Each researcher will prepare a 20-minute presentation of a paper. Papers will be assigned during the first lecture. No free lunch: anyone attending the class will have to present.

General syllabus:

1. Should we tax capital?
   (a) We first review the well-known papers of Chamley and Judd and discuss their results on capital taxes; we use this as an opportunity to review the Dual Approach.
      · Chamley, C., *"Optimal Taxation of Capital Income in General Equilibrium with Infinite Lives"*, Econometrica, 54, 3 (May 1986), 607-622.
      · Judd, K. L., *"Redistributive Taxation in a Simple Perfect Foresight Model"*, Journal of Public Economics, 28,1 (October 1985), 59-83.
      · Straub, L. & Werning, I. (2020).

   (b) We then discuss capital taxes in standard Aiyagari models
      - Domeij, D. & Heathcote, J. (2004) *"On the Distributional Effects of Reducing Capital Taxes"*, International Economic Review, 45/2, p. 523-554.
      - Conesa, J. C., Kitao, S. & Krueger, D. (2009), *"Taxing Capital? Not a Bad Idea after All!"*, American Economic Review, 99(1): 25-48.

   (c) We finally discuss heterogenous capital returns, and implications for optimal capital taxation.
      - Empirical literature: Fagereng, Guiso, Malacrino, and Pistaferri (2020), Bach, Calvet, and Sodini (2020)
      - Quantitative literature: Kitao (2008), Guvenen et al. (2019), Bhandari and McGrattan (2020), Boar and Knowles (2020), etc.

2. How should we tax labor?
   (a) Optimal responses of tax and public debt to shocks in models with a representative agent.

- Complete markets: Lucas, R. Jr. & Stokey, N. L. (1983), *"Optimal fiscal and monetary policy in an economy without capital"*, Journal of Monetary Economics, Elsevier, vol. 12(1), pages 55-93.
- Incomplete markets: Aiyagari, S. R., Marcet, A., Sargent, T. J., and Seppala, Juha (2002): *"Optimal Taxation without State-Contingent Debt"*, Journal of Political Economy, 110, 1220-1254; Angeletos, G.-M. (2002), *"Fiscal Policy with Non-Contingent Debt and the Optimal Maturity Structure"*, Quarterly Journal of Economics 117:2

(b) Labor taxes and transfers in Aiyagari models.

(c) Progressive taxes in Aiyagari models.

- Heathcote, J., Storesletten, K., & Violante, G. (2014), *"Consumption and Labor Supply with Partial Insurance: An Analytical Framework"*, American Economic Review, Vol. 104(7), 2075-2126.
- Heathcote, Jonathan, Kjetil Storesletten, and Giovanni L. Violante (2017). *"Optimal tax progressivity: An analytical framework"*. The Quarterly Journal of Economics 132.4, pp. 1693–1754.
- Ferriere, A., & Gruebener, P., & Navarro, G. & Vardishvili, O. (2021 WP)

The syllabus will be subject to changes and will be updated in the next months.

International Macroeconomics
2022

Contact Information

Instructor: Giancarlo Corsetti
Course websites:

Course Description

The primary goal of this course is to provide the foundations of the core general equilibrium models of the international business cycles and the international financial system. Building on this core model, the lectures will introduce students to frontier theoretical and empirical work on trade, market structure, macroeconomics of capital market integration, sovereign risk and macroeconomic and monetary stability.

Students will be assessed on an assignment requiring some analytical and/or quantitative work; and a referee report on a paper requiring them to map the contribution in the literature, discuss methodology and identify open issues.

The website includes math-lab code for some of the models. Course readings will be provided during lectures. Standard reference books are *Open Economy Macroeconomics* (henceforth, OEM) by Martin Uribe and Stephanie Schmitt-Grohe and *Foundations of International Macroeconomics* by Kenneth Rogoff and Maurice Obstfeld.

1 Equilibrium models of the international business cycle

1. International business cycle and the international financial system: Stylized facts
2. Real exchange rates, income and capital flows with complete and incomplete asset markets
   (a) The core model is steps: Endowment, production without capital, Investment
   (b) Sectoral adjustment: tradable/non-tradables, comparative advantage
3. Macroeconomics of capital market integration
   (a) Financial frictions, misalignment and demand imbalances
   (b) Disaster risk: asset prices, wealth and gains from efficient risk sharing

Corsetti, G., L. Dedola, and S. Leduc. 2008. "International Risk Sharing and the Transmission of Productivity Shocks," *Review of Economic Studies*, 75(2), 443-473.

Heathcote, J., F. Perri. 2013. "The International Diversification Puzzle Is Not As Bad As You Think," *Journal of Political Economy*, 121 (6), 1108-1159.

2 Exchange rates and prices

1. Trade elasticities, markups and market structure
   (a) Monopolistic competition with vertical interactions; oligopolistic competition
   (b) Strategic complementarity and the local currency price stability of imports
2. Invoicing and pricing to market
   (a) Empirical evidence
   (b) Producer, Local and Dominant Currency Pricing

Atkeson, Andrew, and Ariel Burstein. 2008. "Pricing-to-Market, Trade Costs, and International Relative Prices." The American Economic Review, 98(5): 1998? 2031.

Burstein, Ariel, and Gita Gopinath. 2014. "International Prices and Exchange Rates." Handbook of International Economics, 4: 391?451.

Corsetti, G., L. Dedola. 2005 "A Macroeconomic Model of International Price Discrimination", *Journal of International Economics*, 67 (1), 129-155.

3 Monetary Stabilization

1. The monetary "workhorse" New Keynesian model: natural rate properties
2. Stabilization policy
   (a) Deriving loss functions with internal and external objectives; open economy Phillips Curve and targeting rules
   (b) Gains from monetary policy cooperation

Corsetti G, L. Dedola and S. Leduc, Optimal monetary policy in open economies, in the Handbook of Monetary Economics, vol. III, Edited by Ben Friedman and Michael Woodford, 2010.

Gopinath, Gita, Emine Boz, Camila Casas, Federico J Diez, Pierre-Olivier Gourinchas, and Mikkel Plagborg-Moller. 2020. "Dominant Currency Paradigm." American Economic Review, 110(3): 677-719.

4 Sovereign risk, currency and macroeconomic stability

1. Krugman 1979 redux: a FTPL model of currency and price stability
2. Belief-driven crises: the Calvo 1988 Model
3. The monetary backstop of government debt

Corsetti G. and F. Maeng (2020). "Debt Crises. Fast and Slow". mimeo
Lorenzoni, G. and I. Werning (2019). "Slow Moving Debt Crises". American Economic Review 109 (9), 3229-3263.

5 International financial intermediation and vehicle currencies

Xavier Gabaix and Matteo Maggiori. "International Liquidity and Exchange Rate Dynamics". In: Quarterly Journal of Economics 130.3 (2015), pp. 1369?1420.

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Liquidity Traps and Secular Stagnation

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Course objective

This half-credit course covers models of the liquidity trap and secular stagnation. We will examine the potential sources of shocks and transmission mechanisms pushing an economy into the liquidity trap (financial frictions, deleveraging, precautionary savings, confidence...), as well as the "unconventional" policies (Forward Guidance, Quantitative Easing, Unconventional Fiscal Policy...) that can lift aggregate demand when conventional monetary policy fails. Finally, we will turns to models of secular stagnation, wherein the liquidity trap becomes very persistent or even permanent.

Grading

Grading will be based on an in-class presentation (50%) and a referee report (50%).

Topics

Review of the New Keynesian DSGE model

- Lawrence J Christiano, Martin S Eichenbaum, and Mathias Trabandt. On DSGE models. *Journal of Economic Perspectives*, 32(3):113–40, 2018
- Lawrence J Christiano, Mathias Trabandt, and Karl Walentin. DSGE models for monetary policy analysis. In *Handbook of Monetary Economics*, volume 3, pages 285–367. Elsevier, 2011
- Frank Smets and Rafael Wouters. Shocks and frictions in us business cycles: A bayesian dsge approach. *American Economic review*, 97(3):586–606, 2007
- Lawrence J Christiano, Martin Eichenbaum, and Charles L Evans. Nominal rigidities and the dynamic effects of a shock to monetary policy. *Journal of Political Economy*, 113(1):1–45, 2005

The Liquidity Trap

- Gauti B Eggertsson and Sergei K Egiev. Fundamental driven liquidity traps: A unified theory of the great depression and the great recession. Technical report, Working paper, 2020
- Ivan Werning. Managing a liquidity trap: Monetary and fiscal policy. NBER Working Papers 17344, National Bureau of Economic Research, Inc, August 2011
- Gauti B. Eggertsson and Paul Krugman. Debt, deleveraging, and the liquidity trap: A Fisher-Minsky-Koo approach. *The Quarterly Journal of Economics*, 127(3):1469–1513, 2012
- Veronica Guerrieri and Guido Lorenzoni. Credit crises, precautionary savings, and the liquidity trap. *Quarterly Journal of Economics*, 132(3):1427, 2017
- John Cochrane. The New Keynesian liquidity trap. *Journal of Monetary Economics*, 92:47 – 63, 2017
- Morten O Ravn and Vincent Sterk. Macroeconomic fluctuations with HANK & SAM: An analytical approach. *Journal of the European Economic Association*, 19(2):1162–1202, 2021
- Jess Benhabib, Stephanie Schmitt-Grohé, and Martin Uribe. Avoiding liquidity traps. *Journal of Political Economy*, 110(3):535–563, 2002

Forward Guidance –and its Puzzle

- Gauti B. Eggertsson and Michael Woodford. Zero bound on interest rates and optimal monetary policy. *Brookings Papers on Economic Activity*, 2003(1):139–233, 2003
- Florin O Bilbiie. Optimal forward guidance. *American Economic Journal: Macroeconomics*, 11(4):310–45, 2019
- Marco Del Negro, Marc Giannoni, and Christina Patterson. The forward guidance puzzle. Staff Reports 574, Federal Reserve Bank of New York, 2015
- Marcus Hagedorn, Jinfeng Luo, Iourii Manovski, and Kurt Mitman. Forward guidance. *Journal of Monetary Economics*, 102:1–23, 2019
- Alisdair McKay, Emi Nakamura, and Jon Steinsson. The power of forward guidance revisited. *American Economic Review*, 106(10):3133, October 2016
- Sushant Acharya and Keshav Dogra. Understanding HANK: Insights from a PRANK. *Econometrica*, 88(3):1113–1158, 2020
- Philippe Andrade, Gaetano Gaballo, Eric Mengus, and Benoit Mojon. Forward guidance and heterogeneous beliefs. *American Economic Journal: Macroeconomics*, 11(3):1–29, 2019

Quantitative Easing

- Wei Cui and Vincent Sterk. Quantitative easing. Working papers, UCL, 2019

- Peter Karadi and Anton Nakov. Effectiveness and addictiveness of quantitative easing. *Journal of Monetary Economics*, 117:1096–1117, 2021
- Mark Gertler and Peter Karadi. A model of unconventional monetary policy. *Journal of monetary Economics*, 58(1):17–34, 2011

Fiscal Policy

- Isabel Correia, Emmanuel Farhi, Juan Pablo Nicolini, and Pedro Teles. Unconventional fiscal policy at the zero bound. *The American Economic Review*, 103(4):1172–1211, 2013
- Gauti B. Eggertsson. What fiscal policy is effective at zero interest rates? In *NBER Macroeconomics Annual 2010, Volume 25*, NBER Chapters, pages 59–112. July 2011
- Lawrence Christiano, Martin Eichenbaum, and Sergio Rebelo. When is the government spending multiplier large? *Journal of Political Economy*, 119(1):78–121, 2011
- Karel RSM Mertens and Morten O Ravn. Fiscal policy in an expectations-driven liquidity trap. *The Review of Economic Studies*, 81(4):1637–1667, 2014

Secular Stagnation

- Gauti B. Eggertsson, Neil R. Mehrotra, and Jacob A. Robbins. A model of secular stagnation: Theory and quantitative evaluation. *American Economic Journal: Macroeconomics*, 11(1):1–48, 2019
- Olivier Blanchard. Public debt and low interest rates. *American Economic Review*, 109(4):1197–1229, 2019
- Marco Del Negro, Domenico Giannone, Marc P Giannoni, and Andrea Tambalotti. Global trends in interest rates. *Journal of International Economics*, 118:248–262, 2019
- Marco Del Negro, Domenico Giannone, Marc P Giannoni, and Andrea Tambalotti. Safety, liquidity, and the natural rate of interest. *Brookings Papers on Economic Activity*, 2017(1):235–316, 2017
- Jean-Baptiste Michau. Secular stagnation: Theory and remedies. *Journal of Economic Theory*, 176:552–618, 2018
- Gauti B Eggertsson, Manuel Lancastre, and Lawrence H Summers. Aging, output per capita, and secular stagnation. *American Economic Review: Insights*, 1(3):325–42, 2019
- Lawrence H Summers. Demand side secular stagnation. *American Economic Review*, 105(5):60–65, 2015
- Michael T Kiley and John M Roberts. Monetary policy in a low interest rate world. *Brookings Papers on Economic Activity*, 2017(1):317–396, 2017
- Ricardo J Caballero, Emmanuel Farhi, and Pierre-Olivier Gourinchas. The safe assets shortage conundrum. *Journal of Economic Perspectives*, 31(3):29–46, 2017
- Sushant Acharya and Keshav Dogra. The side effects of safe asset creation. 2020

Frontiers of Macro Labour

Description and objectives

This course gives an overview on the topics that constitute the frontier of research on labour markets in macroeconomics. The first block focuses on unemployment dynamics while the second focuses on wage dispersion. The aim of the course is to familiarize students with these topics so that they can follow specialist seminars, pursue related research projects and incorporate aspects of this field into their own research. In particular, the course aims to provide students with a critical understanding of the main puzzles, models, assumptions and empirical findings of modern labour economics. The emphasis is placed on empirical evidence and its implications for theory.

Class Structure

The class would consist on a presentation by me, followed by a group discussion. The presentation will frame the discussion, and it would be based on the lectures notes. Before each class students will have to prepare for the discussion by reading papers and *very light* research. Because the purpose of the course is to give the students an overview of the field, the course is very heavy on material. I am not expecting the students to read everything. The lecture notes are intended to (1) provide the students with general context and (2) serve as a reference guide which they can use to direct their search into the topics they find useful/interesting.

Evaluation

Take home exam (essay based). It will be similar to the weekly assignments, but graded.

Teaching Plan

1. **Unemployment.** Why is there unemployment? How do macroeconomists account for unemployment? Hours vs bodies. The elasticity of labour supply. Classical perfect markets, employment lotteries, unions, sticky prices. Problems with these approaches.

2. Search frictions and the DMP revolution. The Beveridge curve, what is is, what can we learn from it. Identifying the matching function. Review of the core assumptions and ideas of the DMP model. The Hosios condition. The Shimer puzzle and its theoretical responses. The fundamental surplus.

3. Empirical responses: the Ins and Outs of unemployment. Heterogeneity and the role of OLF flows. Consequences for macro-labour modelling. Bells and whistles: Search intensity, endogenous job destruction, risk-aversion and uncertainty.

4. The frontiers of unemployment. The long of it: Long-term unemployment, its impact on the overall volatility of unemployment and why it is different from short-term unemployment. Duration dependence vs composition. The short of it: recalls, marginal jobs and self-employment. Occupational mobility and 'rest' unemployment.

5. **Wage inequality** Why and when does wage inequality matter? Empirical facts about wage inequality. AKM decompositions: pros and cons. The Kim Kardashian Paradox. *Firming up inequality*, within and between firm inequality. Possible sources: technical change versus labour market frictions.

6. Search and matching frictions: models of on-the-job search: Burdett and Mortensen, Postel-Vinay and Robin. Doniger hybrid model. Job ladders. Amenities.

7. Technology, firms and sorting: Recent developments on technology-biased technical change. Superstars, entrepreneurs and teams. Markups. Eeckhout and Kircher.